

# THE MONIST.

---

## NATIONALISATION OF EDUCATION AND THE UNIVERSITIES.\*

A LITTLE more than a century ago it was universally believed that, in the nature of things, the vitality of a republic and its size stand in an inverse ratio. The inadaptability of a republican system of government to a state of vast territorial expanse and with a very numerous population was considered an almost axiomatic, i. e. self-evident, truth. When the thirteen English colonies in North America had taken the bold resolution to transform themselves into the United States of America, many an ardent patriot often asked himself, not free from anxious foreboding, whether the Union was within the limits laid down by irreversible political laws, as the utmost extent of republics fit to endure. If it had not been for the size of the country, the doubts as to whether the republican experiment was likely to prove a success, would never have assumed a character, which gave sufficient color to the charge of monarchical tendencies, to make them appear well-founded in the eyes of so many people. When afterwards a new empire was to be added to the Union by the Louisiana purchase, the doubt, as to whether the republican system of government would be equal to the strain put upon it by such an immense enlargement of the area of the United States, played a not unimportant part among the objections of the opposition. That experience has definitively disposed of these ideas,

---

\* Commencement address at the Nebraska State University, June 7, 1893.

by proving the apprehensions to be unfounded, is no reason to think meanly of the political discernment of those who entertained them. It will not be universally admitted, that experience has thus far proved them to be wholly unfounded also as to consolidated republics. And how can it be wondered at, that at that time the essential difference was not fully realised and understood, which exists between a federal and a consolidated republic with regard to the peculiar dangers and evils apt to arise from this specific cause. Though republican federations had been known to the world for two thousand years, no instruction was to be derived from their history on this head. As to the extent of territory, the consolidated Roman republic, which had consumed its vitality with its growth, could alone be compared with the United States; and as to many of the essential features of their political structure, neither modern nor ancient history furnished an analogy. In the soil of the New World, the germs of European institutions had—adapting themselves to the new conditions—developed into a new type of commonwealth.

It is conceded on all sides that, next to the capacity of the American people for self-government, the United States owe it primarily to the happy blending of the principles of National Union and State Independence that, taking all in all, hitherto their history has been the most striking and convincing vindication of republican institutions; and it is hardly questioned that, but for the happy blending of these two principles, a republic comprising half the North American continent and possessed of all the requisites of vitality never would nor could have existed. Upon their being "an indestructible Union of indestructible States," the vitality of the United States absolutely depends. That, with this principle as the foundation, the domain of a republic *can* be almost indefinitely extended, without thereby destroying its vital energies, has been irrefutably demonstrated. But does that mean, that the United States have definitively solved the problem of keeping the vital forces of a republic covering a vast area *unimpaired*? By no means. Only the preliminary question has been settled by them for all time to come, what the indispensable prerequisite of its solution is, and they have thus far succeeded in preserving their vitality. But even



as to themselves, the solution of the problem itself has to be repeated over and over again, not only by generation after generation, but every year and every day. The hour never will, never can come, when the American people can, with impunity, say: the task is accomplished; let us rest and enjoy the fruits. It never can come, because the problem itself is in a continuous state of transformation. Though the changes be so slow, that they are imperceptible to the keenest eye trying to follow them up from year to year, they are none the less real, and if they are not duly heeded, the penalty will have to be paid some time in one way or another. While the fundamental principle, the blending of National Union and State Independence, is irreversible, the attempt to make its application immutable, would be fatal. I say the attempt, for actually to do it, is, in the nature of things, impossible. The American people are not only constitutionally a nation. The civil war did not result in the permanent disruption of the Union, but in welding it more indissolubly together, because, with the single exception of slavery, the facts coincided with the law. In spite of the tremendous sectionalising influence exercised by slavery, the nationalisation in feeling, thinking, and interests had made such progress under the operation and protection of the law of the land, that it could stand as severe a test, as any consolidated State can boast of having stood. The causes, to which it was due, that the facts were in conformity with the law, have been ever since unremittingly at work,—the counter-tendencies have disappeared with the abolishment of slavery,—and, independent of that, those causes are every year acquiring a greater force. The actual nationalisation, therefore, goes steadily on, whether we like it or not, and though the constitutional nationalisation be allowed to remain unchanged. While the legal status under the Constitution may not be altered for ever so long, we are confronted by constantly changing conditions. If we do not conform in what we do and leave undone to the irrepressible changes of this evolutionary process, the maintenance of the principle of blending National Union and State Independence will avail us but little. The vital energies will dry up and ebb away, for while we have kept the form, we have become strangers to the spirit which renders it a

magic force. Nor ought the dividing line between political parties to run, as in days of yore, on the question of State rights and consolidation. All discriminating patriots must be as well State rights men as consolidationists, respectively conscious supporters and promoters of further nationalisation. Where and how ought State independence to be strengthened, so as to prevent an over-consolidation by the silent working of those nationalising causes, which it is impossible to stem? and: Where and how ought consolidation, respectively nationalisation, to be promoted, in order to make the working of those nationalising causes conducive to the true interests of the people and to the invigorating of republican institutions? These are the two questions which the American people have constantly to ask themselves. On the discretion and discernment displayed in trying to find the correct answers must it depend, whether the federative principle will work as well in the future, as it has done in the past.

If these propositions must be admitted, it can be proved that in no respect is conscious and systematic nationalisation more imperatively needed than in regard to education. At first sight this assertion may seem worse than extravagant. I am, however, not afraid to submit my case to the jury of the American people, if I am but conceded the legal right of every criminal, to be heard ere I am judged.

Education is the bed-rock on which this republic rests. However excellent its political institutions be, its decay and ultimate downfall is inevitable, if the people fail to do their full duty by themselves in this respect. For, in a democratic republic, political institutions are live forces only so far as the people have the mental and moral requirements for working them well, and these mental and moral requirements can be attained only by education. It is, therefore, in the strictest sense of the word, a *vital* question for the republic that every one of its sons and daughters receive not only some schooling, but that the education of all be proper and adequate. That is a tremendous task. It constantly grows in scope and intricacy, and at the same time, it becomes of more and more import that it be well accomplished. With the people rests the ulti-

mate decision in everything, and the problems confronting the commonwealth are assuming more and more a character, taxing the highest statesmanship to the utmost. Thus the claims upon the intelligence and the moral soundness of the people are fast being strained far beyond anything ever known by any former generation in this or any other country. And lack of the required intelligence and moral soundness in any one State necessarily affects the whole Union. A State that is derelict to its duty in the education of its people, wrongs not only itself, but also the nation. By its share in the federal government, every State is directly instrumental in laying down the law for the whole country. All the States are thereby made to participate in the payment of the penalty for its intellectual and moral deficiencies. This is, however, by no means the only way in which they are made to suffer by them. What the law does with regard to everything rendered federal by the Constitution; commerce, travel, and interchange of population do in other respects. They are unremittingly and with ever increasing intensity at work, multiplying and rendering more close the organic relations between all the parts of the vast domain, every water-way, railroad-track, and telegraph line performing the functions of the veins in the animal organism. If the blood be poisoned in one limb, the virus cannot be prevented from working its way into the whole system.

To admit that education is in the highest degree a national *interest*, and to deny its being a national *concern*, is, however, a self-contradiction. To contest either the right or the duty of a nation to acknowledge every national interest a national concern, and to deal with it accordingly, is a palpable absurdity. Not as to the *Whether*, but only as to the *How*, can the people be restricted by the Constitution. A constitution imposing upon the people an injunction to minister to the needs of the commonwealth, would be as great a political monstrosity as a constitution providing for the dissolution of the state.

This doctrine will not be allowed to pass unchallenged. I shall be asked whether I set myself against the universally accepted fundamental principle of American constitutional law, that the federal government has no powers but those granted to it by the Constitu-

tion. I do not. "Where, then," my interlocutor will go on, "do you find the express grant or the implied power?" Nowhere. "Then you advocate a constitutional amendment to the effect indicated by you?" I do not. I know that such an amendment could not get the vote of a single state, and if there were a possibility of its being adopted by the constitutional number of states, I should be found, to the last, among those fighting it tooth and nail. I can hardly conceive of a more suicidal measure than the adoption of such an amendment. Just because education is the bed-rock on which the republic rests, is it of vital importance that it does not become a federal affair. Self-reliance and responsibility are the main pillars supporting a democratic commonwealth. Kill, in the people of a state and the population of its subdivisions, the habit of self-reliance and the sense of responsibility in regard to the substratum of the whole political and social structure, and they will wither and shrivel up in regard to everything else. The compulsion to tax themselves directly for the establishment and maintenance of schools and the being in close touch with those entrusted with the direction of the educational work are an inestimable boon to the people.

Even if it were economically possible to do without direct taxes, political reasons would peremptorily forbid their abolishment. On account of their moral effect, no state could dispense with them, and least of all a democracy. All indirect taxes are paid more or less unconsciously; the people, however, must be kept conscious that the public purse means their own pockets. The more they lose sight of this, the wider the door is opened to paternalism, and paternalism is a more deadly enemy of liberty than despotism and tyranny. These, if any vitality be left in the people, ultimately kindle the desire for liberty, while paternalism acts upon it as an opiate and ends by killing it through the systematic enervation of self-government. If this is to be kept alive not only in form, but also in essence and in spirit, the people must constantly be held to teach themselves in illustrating by their own acts the irrefutable truth, that not the rights, but the self-imposed duties are the vital principle of true democracy. Nothing, however, is more apt to drive this all-important fact irresistibly home, implanting it ineradi-

cably in their whole feeling and in their conscious thinking, than the necessity to vote, as directly as possible, out of their own pockets the money required for preserving intact and in vigor the prerequisite of *all* that is needed for the preservation of the nation's vitality. If it be not deemed irreverent, I should say that every dollar a man voluntarily votes out of his pocket to provide for the educational needs of the community, preaches to him a political "Sermon on the Mount." "Liberty and self-government," it says, "must be paid for;—state and society are in their very essence ethical conceptions;—they must totter, fall, and crumble to pieces, unless they rest on an ethical foundation;—to preserve, broaden, and deepen this foundation, by providing for the required intellectual and moral equipment of the generations in whose hands the future destinies of the commonwealth will lie, is the paramount duty of the people;—no one has the right to exempt himself from doing his share in the fulfilment of this duty, for the heirloom of the past, enjoyed by the present, is but a trust to be left, with accrued interest, to the future;—the fulfilment of this duty ought to be considered rather a privilege than a sacrifice, for every farthing paid for the maintenance of the humblest village school is an integral part of the nation's life-insurance premium;—glory in this responsibility to the whole country, for it constitutes you, with the wealthiest and mightiest, a joint builder of its greatness;—glory in thus bearing witness by the fruit of the sweat of your brow, that you, too, are sworn in on the creed that man does not live by bread alone;—glory in and render thanks for being thus held to keep ablaze in your own bosom and help kindle in the bosom of the lowliest child of the community, the sacred fire of idealism."

That by many, perhaps by most people, this appeal is not heard in distinct words, I do not contest. But that is no reason to make light of it. Utterly lost it never is. Something of it sinks into the mind even of the dullest and most hard-hearted, though it be but in the form of a faint and vague feeling. To make them lose this, is to deprive them of the best they have. Democracy is not a mill-pond, on which a fragile boat can outride the wildest tempest. It is the open sea, on which the proudest and stoutest craft is sure to

be swamped, sooner or later, if it be not properly ballasted. True idealism, however, never was a more essential part of the ballast, than in these times and in this country. It stands more in need of it than any other state, because its unparalleled opportunities are appallingly powerful incentives to plunge headlong into the materialistic tendencies of the age. Therefore, it is ruthless to lay hands on anything tending to keep alive and foster true idealism in the people. For this reason it would be, in my opinion,—not in intention, but in effect,—a dastardly crime, under any plea whatever, to release the people from the obligation to provide in their local organisations for the education of their youths.

Therefore, I even deem it upon the whole more beneficial than detrimental that many of the higher and most of the highest educational institutions of the country are the free gift of high-minded men and women to the people. I have never agreed with those who have contended in this country that the duty of the commonwealth does not extend beyond providing for primary and, at the most, to some extent for secondary education, and that it would not be fair and proper to tax all for the establishment and maintenance of colleges and universities, which, in the nature of the case, only a small minority can frequent. It would be hard to name a more promising sign of the times, than that this doctrine has of late lost so much of its former hold upon public opinion, that one would have to search long for an advocate of it in its original rigor. It is eminently in the interest of all, that there be an ample number of men and women who have received the highest education. Therefore, it is evidently not only justified, but imperative, that the commonwealth furnish the means for supplying its want. But if the views held in this respect on the continent of Europe had prevailed in the United States, the American people would have been the poorer of one of the vastest and most grateful fields for manifesting idealistic public-spiritedness. An inestimable loss, for idealistic public-spiritedness is not the least of the causes to which it is due that American democracy has stood the test; and idealistic public-spiritedness, like every virtue, grows stronger and more fruitful by being practised. Every donation for educational purposes prompts others to



follow suit, and is, apart from its direct beneficent effects, a most valuable object-lesson to the whole nation. With equal impressiveness, the rich and the poor are reminded of the treasures which "neither moth nor rust doth corrupt." On every educational institution brought into existence in such a way are indelibly inscribed the two magic words to which this country owes its greatness: Help yourself, and Public Spirit; every one of them is a living protest, as well against paternalism—whether it present itself in the socialistic or in any other garb—as against the setting up of the golden calf as the idol of the republic. Therefore, everything tending to seriously check these manifestations of idealism and public spirit in regard to higher education would be deplorable, even if it were in itself commendable, for paternalism and materialism are too rampant to leave anything undone that is calculated to keep them down.

To contend that the existing decentralisation in regard to education must be done away with, would, for these reasons, be a truly Quixotic charge upon windmills: the venture must result in broken bones. It cannot, and, if it could, ought not to be done, for this decentralisation is the natural outgrowth of the whole historical development of the commonwealth and in perfect accordance with the underlying principle of its political and social structure. But it would be strange logic to conclude from this that it can have worked no harm, or that the evil consequences it may have had cannot be remedied. Can it be denied that, apart from the primary schools, it sounds almost like mockery to speak of an American system of education? If we look at the schools of a higher grade, we are confronted by a bewildering chaos, and the nearer the top, the worse the confusion becomes. That the effects of this are not altogether good, will be universally admitted, though opinions will differ as to the weight that ought to be attached to the bad consequences in the aggregate and severally. To me, some of them seem to be of a very serious character, and I hold that they must from year to year become of more consequence. To say that somebody has been through a "high school," does not convey sufficiently definite information as to either the kind or the amount of instruction he has received. To know that somebody is a graduate of an "academy," a "college,"

a "university," means to know next to nothing as to his mental equipment. To gauge our man, we must inquire, What academy, what college, what university? Having learned that, we are in hundreds of cases not a whit wiser than before. We have to ask for the calendar of the institution, and, after having read that, we shall often be still pretty much at sea, for, as the Germans say, "paper is patient," and the printing of a first-class programme implies by no means of necessity first-class instruction. This may be considered by some of little or no moment, because the degrees confer no rights whatever. But they are, nevertheless, not senseless gewgaws. If they be deemed such, their abolishment must be insisted upon, for then they are as much out of place in this country as orders or other meaningless titles. They are intended to be certificates of knowledge and mental training. If they lose this character, they are nothing, or worse than nothing. It is, however, self-evident that they must be deprived of this character, exactly to the extent that the educational institutions bearing the same name and conferring the same degrees differ from each other. Do you not think it more than likely that, if a law were passed making it obligatory to add to the letters indicating a degree the name of the institution by which it was conferred, an astounding number of ornamental tails to names would be cut off forever?

This would not be done, if the degrees merely failed to be definite and reliable certificates of knowledge and mental training. They do positive harm, because the institutions conferring them have little more in common than the name, their educational standard differing in the extremes, as much as the crippled shrub and the sturdy oak. While the public do not know what value to attach to the degree, a large percentage of the recipients are betrayed into offensive and pernicious self-deception. Upon the official avowal of their *alma mater*, they lay the flattering unction to their soul that they have received a much better intellectual outfit than they really possess. These institutions practically reverse the precept of the Greek sage: not "know thyself," but "deceive thyself" is the maxim imprinted on their diplomas. And this self-deception is a subtle, contagious virus. It is at least doubtful, whether more will

take warning by looking through the false pretense, or be lured by it into the same mistaken notions as to the requirements of genuine higher education. To have practically no fixed standards for the different grades of higher education must as inevitably have mischievous effects upon the intellectual life of a people, as its economic life must be demoralised by allowing everybody to coin money of the same outward appearance, but of any alloy he pleases. Not that harm has been done by the almost unlimited freedom enjoyed by the educational institutions owing their existence to private munificence, is to be wondered at ; it is astonishing that the deleterious effects have not been much worse. A premium is offered for sailing under a false flag. If a college may be called a university, and an academy a college, it would be more than surprising if the grander name were not frequently preferred, for it flatters alike the vanity of the donors, the instructors, and the pupils, and will—with more or less reason—be expected to work as a bait. With the name goes the right to confer degrees, and the exercising of this privilege is to serve the same purposes. But the name renders it necessary to keep up appearances, and that is an expensive pleasure. The masquerading in a pretentious guise cuts down the allowance of wholesome food. Worthless universities instead of good colleges, inferior colleges instead of satisfactory academies and fitting schools, are but too often the result. No name will deprive the rose of its sweet scent ; but the buttercup cannot, with impunity, call itself a rose.

The worst, however, is, that even the best institutions of the higher order are made to pay a heavy penalty for the shortcomings of those of the lower rank. Not getting the proper material, they do not turn out as good work as they in themselves might do. Much valuable time, which ought to be devoted to going on with the building, must be spent in mending and strengthening the deficient foundation, which, after all, does not acquire the requisite solidity, because mending is necessarily patchwork. Nor is the damage confined to the pupils that have been sent up from inefficient schools. These act as a drag upon those who have come adequately prepared. To render matters worse, the deficiencies are neither the same with

all, nor is it known beforehand where they will be found and how far they will extend. Neither are the curricula the same, nor is there any guaranty that the same curriculum means the same work done. Here so many things have been taught, that everything has suffered in regard to thoroughness. There, specialisation has commenced so early, that the basis is too narrow and too shallow. Training for a special purpose has encroached upon education. All these difficulties greatly hamper the institution. But they do more. They exercise a strong pressure upon it to stray from the right path, for they are powerful incentives to yield to the evil tendency, more to measure, than to weigh the work done. This is, in my opinion, the most deplorable of all the bad consequences which the lack of a uniform system, resulting from the decentralisation of education, has thus far had ; and it is all the more dangerous, because the measuring principle is so well fitted to be clad in the seductive garb of a lucid and clear-cut system. \*

I do not expect that every one of my propositions will be universally assented to. But can any unprejudiced observer dispute that there is enough truth in what I have said to prompt the people seriously to ponder the question, where this is going to end? If no conscious, energetic, and concerted effort be made to counteract the evil effects of decentralisation, the very fact of higher education having assumed such a kaleidoscopic character renders inevitable its becoming more and more kaleidoscopic. The founders, boards of trustees, presidents, and faculties of new institutions are almost compelled to give their individual notions on higher education, to a dangerous extent, free scope. Having a hundred different patterns presented to their consideration, the temptation is well-nigh irresistible not to adopt any one of them, but to devise a new one. A new experimenting laboratory is set up. That its experiments will be, positively or negatively, of some value, is to be supposed. In most cases, however, the public interest would have been better served by a good factory, renouncing the risky ambition of dabbling with new inventions.

A European is struck with wonderment that, considering the extent to which decentralisation in higher education has been car-

ried, not infinitely more harm has been done, and that the harm it does, seems to impress the Americans comparatively so little. Neither can be understood, unless one fully realises to what a degree the American commonwealth is still in its formative period, and what an astounding educational power there is in American life. To the former it is principally due, that the deleterious effects mentioned are here in fact of much less consequence, than they would be, where the advantages of an historical development, counting by more than centuries, are paid for by the rigidity of age; and the latter supplements and corrects the work of the schools so effectively, that it is not surprising to find even many a keen-sighted and highly accomplished American more or less blindfolded as to this. Because the ultimate results are satisfactory, it is taken for granted, that the educational conditions of the country must be all right, while a searching critical examination irresistibly forces upon one the question, whether a good deal is not achieved in spite of them. If this be so, failure to promptly attend to what is defective in them will surely be punished, for thanks to the rapidity with which the United States are being filled up, their formative period is fast drawing to a close, and with its close, the educational power of American life will be, in some important respects, very sensibly diminished. The peculiar advantages, they have thus far enjoyed, are steadily growing weaker, while intellectually and morally, the difficulties confronting the whole civilised world, and difficulties peculiar to them, are as steadily making greater demands upon the people. Growth of population and development of economical life, with all its attending circumstances, constantly working at the further nationalisation of the American people, and the problems to be solved growing more and more intricate, disaster must become inevitable, if education does not keep abreast of this double movement; and this it cannot do, if we do not energetically and systematically go to work to nationalise education without consolidating it. Nor have we any time to lose, for the task is by no means easy. Every inch of ground gained will be the price of an arduous and protracted struggle.

From the Federal Government no direct assistance is to be derived, for the question is not within the province of its constitutional

powers, and if it were, we ought not to ask its interference, because, as I said, to nationalise education without consolidating it, is to be the aim. Public opinion, unaided by law, must effect the reform. Public opinion, however, is in this country even more powerful than the law. It is sure finally to overcome not only all active, but even all passive resistance, which is always much harder to overcome. But is there any possibility of ever inducing public opinion to take the question up in full earnest? I am confident there is, and at all events it must be tried. The difficulty of the task is no excuse for not undertaking it. It only admonishes us, not to waste time, strength, and enthusiasm in vain attempts to carry the fortress by assault. The works are so extended and so strong that only a methodical siege requiring a great deal of skill, patience, and determination, offers any chance of success. Two preliminary questions must, therefore, be answered, ere operations can be commenced: who is to conduct the campaign, and by what tactics can the approaches be pushed on the fastest?

The answer to be given to the first question is plain. The instructors are to be considered the experts, if anybody can claim the title. Upon them, therefore, devolves the duty to take the lead. This they have already commenced to do. The very existence of a National Educational (Teacher's) Association is in itself irrefutable proof that the opinions advanced by me, have, in some way and to some extent, asserted themselves for some time. How this has been done and what has been effected, I do not feel called upon to discuss. I merely state that while I appreciate what it has done and expect from it still more in the future, I am firmly convinced that the goal can never be reached if we are to content ourselves with what this organisation is capable of achieving. This will be deemed the less disparaging, if I furthermore state that, in my opinion, the end could no more be attained by any other organisation acting singlehanded. Hunting for any one device which will as certainly effect a cure as patent medicines claim to cure bodily ailments, is but to waste time. The evil has to be attacked from many points and in many ways, if sanitation is to set in.



While I am fully persuaded of this, I am, however, on the other hand as firmly convinced that nothing will be of avail if the Universities do not step forward, heading the column of attack and adding compulsion to suasion. The reform has to be worked from the top downward. At present the law is, to a great extent, dictated by the schools of the lower grade to those of the higher. This must be reversed. The Universities must insist upon getting the proper material for doing what in their judgment is the proper work. They must cease fitting themselves to what the schools are pleased to send them. By closing their doors against all applicants whom they do not really deem adequately prepared, they must compel the schools, either to take down from their portals the inscription "fitting school," or to mend their ways and furnish their pupils the kind and the amount of instruction they ought. A University that meekly submits to travel on whatever roads some hundreds of schools, which all more or less follow their own notions, happen to think good enough, never can be a University except in name. No institution has a moral right to the proud name of University that does not, consciously and determinately, do all that is in its power to direct its educational policy solely by what the civilisation of the age and the true interests of the nation require.

I wish the old maxim *ultra posse nemo obligatur* did not compel me to say "to do all that is in its power," for I am but too well aware how deplorably little that is in many cases. State Universities are subject to another will, and this other will is apt to have very much its own notions as to how much a University may be allowed to cost, and to determine the standard of the University entirely by the local standard of schools. Other Universities, though legally their own masters, are practically restrained as much or even more by implacable facts. No University can entirely dispense with students, and the endowment of more than one University forbids its making light of the number of students it can secure. Being to some extent dependent upon the students for their maintenance, they cannot afford to be very fastidious in regard to the standard of schools they try to enlist into their constituency. But there is also a goodly number of Universities whose position is in absolutely every

respect so strong that they can enter the lists without any risk whatever to themselves. Whether they stop growing for a while or even decline in numbers for some years does not affect their future in the least. They are so much in quest by students that the fitting schools are sure to make haste to meet their requirements, if these rise above their curriculum. To move on in wild leaps would, of course, be foolish. But so long as these Universities do not do that they never need to look backward in their onward march; their whole constituency of schools must follow close upon their heels, because they cannot afford to bolt and drop out. The more the leading Universities proceed upon a concerted plan, the larger the circle would grow, within which their joint pressure would be irresistible: the strength of each would be doubled by pressing on, shoulder to shoulder with the others, on the same lines. At the same time it will make it correspondingly easier for the weaker ones to follow in their wake. How could it fail to make an impression upon those on whom they depend, if they can back their pleas by urging the practical unanimity of all the foremost institutions of the country as to the right course to take? The more the leading Universities are united, not only as to the scope and method of their own work, but also as to what is to be considered the proper preparation for University work, the more will deviations from the rules laid down by them come to imply to public opinion inferiority of standard; and if there is a whip under which American communities smart, it is this. As to this would be added the missionary influences of the alumni sent from the leading Universities into all parts of the republic, it would be strange indeed, if the idea were not constantly to spread and to cast deeper root, that to adequately provide for the educational needs of the country, it is necessary consciously to create and systematically to foster a tendency, by the free action of public opinion, more and more to harmonise education, in developing it everywhere and in all its ramifications into a thoroughly organic structure.

I am prepared to hear the opinions I have ventured to advance strenuously contested and, perhaps, even mercilessly ridiculed by many. The open antagonists, however, cause me but little uneasiness. I fear only one thing, i. e. that those who more or less endorse

my criticisms and agree with me as to what is desirable, will be induced by the arduousness of the work to persuade themselves that it is impossible to bring about such a reform. To them I should say: Where there is a will, there is a way, and the American people *must* be brought to will this reform, because every year a portentous word is becoming more true and of greater import: "the age of perils is past, but the age of difficulties has set it."

H. VON HOLST.

## MEANING AND METAPHOR.

PROFESSOR HUXLEY supposes\* "that so long as the human mind exists, it will not escape its deep-seated instinct to personify its intellectual conceptions." He finds that "the science of the present day is as full of this particular form of intellectual shadow-worship as is the nescience of ignorant ages." The difference he sees is "that the philosopher who is worthy of the name knows that his personified hypotheses, such as law, and force, and ether, and the like, are merely useful symbols, while the ignorant and the careless take them for adequate expressions of reality." He then goes on to warn us against dealing with symbols as though they were "real existences."

Few indeed are free from reproach in this matter, so far as reproach is deserved at all in the general unconsciousness of what constitutes the danger. Few see the question to be vital or the danger to be urgent; and even those who do are apt to deny that the search for a remedy can be a crusade worth attempting; the very idea seems Utopian or pedantic. On the one hand, teachers as a rule do not take their own analogies and metaphors seriously. Both the literary and scientific, as well as the philosophic and historical instinct tell against their doing so. In their eyes figures have either faded into indifferent abstractions, or they are obviously pictorial and merely rhetorical. But the average reader is apt to take them at the foot of the letter. He is usually unaware both of the extent to which he literalises and of the curious inconsistencies which his

---

\* *The Nineteenth Century*, April, 1886. (Reprinted in *Essays on Controverted Questions*.)

literalising involves. So he makes his inferences with a light heart, and wonders, perhaps, at the resulting confusion without suspecting its true cause.

Would that the real state of the case and its practical consequences could be pressed home to all with such force, that whatever be our line of work or thought or expression we should strive in earnest to mend matters. At least, we might begin by learning better what part symbolism plays in the rituals of expression, and ask ourselves what else is language itself but symbolism, and what it symbolises. We should then examine anew the relations of the "symbolic" to the "real"; of image, figure, metaphor, to what we call literal or actual. For this concerns us all. Imagery runs in and out, so to speak, from the symbolic to the real world and back again. As matters stand, we never know where we are because we know so little where our phrases or our words are; indeed, perhaps they and we are "neither here nor there"! Or, if we do know where we are, we cannot be sure that our hearer or reader knows where he is. He, too, is probably "neither here nor there." He often praises or agrees with us in the wrong place or the wrong manner. That is worse than being complained of or differed from; it is difficult to repudiate approval. Nor can we take refuge in lucidity and fancy that the clear must be the true. In the long run and in the cases which *signify* most, there is no escape through merely lucid style or method. The "luminous" speaker or writer, the "forcible" orator or essayist, the moment he tries to convey to the public mind a thought which is really new, will find himself hampered by his very clearness itself. His ideas are controverted on assumptions not really his; or he himself is misled in subtle ways by what he assumes in others.

Thus, by an instructive paradox, the clearest writer is often the most controversial; and he wonders at our perverseness as, while we admire his power and his "style," we wonder at the perverseness in him. We possibly agree with him in ways we do not suspect; he possibly agrees with us in senses he ignores. Such a writer may pride himself on a chary use of metaphor, or on a carefully sharp distinction between "image" and "thing" or "object." But

he is liable to forget the danger dogging him even here. One is tempted to say that there is only one term more figurative as well as more ambiguous than "metaphorical," and that is "literal." Most certainly much that is called "literal" is tinged with the figurative in varying degrees, not always easy to distinguish, even with the help of context. The word "literal" itself is indeed a case in point. It has rarely, if ever, any reference to writing.

The question is, whether this state of things is quite so inevitable as most of us seem to think. Certainly, so long as we are content to live in the fool's paradise of supposing that only the perverse, the prejudiced, the stupid, or the ignorant can possibly mistake our meaning, and that our misreadings of others are simply due to their "obscurity," or "quibbling," or literary incapacity, we shall ourselves contribute to the hopelessness of the situation. But this is a subject which cannot be dealt with in an incidental way; it is rather a hope for the future, that one of the most practically serviceable of subjects—that of Meaning, its conditions and its changes—shall be seriously taken up. Then, indeed, we may get back to the first of all questions, and that which is most pregnant of helpful answers; that which needs asking more than any other if good work is to be done in this day of universal "unsettlement":—What do we really mean? On all sides dead calms are stirred and ruffled, dead levels upheaved or depressed; nothing (happily) can hope to escape the wave of quickening force. So before long we may well be asking this question in good earnest; and when we do we can but be the better, even if we must needs submit in some cases where we may have been prematurely positive, to be content (for the moment) with the answer: We do not really know.

The fact is, that we have been postulating an absolute Plain Meaning to be thought of, as it were, in capital letters. We have been virtually assuming that our hearers and readers all share the same mental background and atmosphere. We have practically supposed that they all look through the same inferential eyes, that their attention waxes and wanes at the same points, that their associations, their halos of memory and circumstance, their congenital



tendencies to symbolise or picture, are all on one pattern. Verily, we need a "Critique of Plain Meaning"!

Again we *quote* on the same assumption. Unless the language of our author is obviously archaic; unless his allusions unmistakably betray a different life-context, a different social "*milieu*," in short, a different mental world, we claim him or we repudiate him on the same principle. We take his words, we take his phrases, we fill them out with the same content as our own, we make him mean precisely what we ourselves mean. And be it noted that it is always what we mean *now*. That this in any way varies from what we meant at some time when, e. g., our attention was differently focussed, rarely enters our heads.

We shall, I suppose, admit that until lately there was one very good reason for this state of things. Only the exceptional mind (if any); only the mind which could not make itself fully understood by its contemporaries, and would risk being reckoned crazy or criminal if it spoke "plainly," had any suspicion that this way of looking at things was being gradually invalidated by the general extension of the critical domain. The history of language, its relation to thought; the scope of expression and representation, the function of the figurative and symbolic; the growth of all means of mental communion from the simplest rudiments of gesture or cry to the highest point of intellectual complexity,—all this was either ignored or taken for granted on radically insecure bases.

Again, while the underlying conditions of language must be looked for in the domain of psycho-physics, that science had not yet come into existence. Even now it is but feeling its way and putting forth tentative hypotheses, warning us, as it does, so that they are liable to be constantly modified and occasionally revolutionised. And what does it realise, first and foremost? That our difficulties on the very threshold of the inquiry are, as usual, largely those of language. On all sides we have to use, as best we may, modes of expression that inevitably convey ambiguous meanings even to the thoughtful, even to the trained mind, which cannot but carry with them a background of outgrown or disproved premises, vitiating more or less every conclusion that we draw from them. The very

phrases which are our only shorthand for the vast oratory of nature and experience betray us in the using. We have taken them as though they were like numerals invariable in meaning, thus supposing them subject to a permanent uniformity. We have taken them as though they were without a history, merely fortuitous labels or symbols of unanimous consent; the accepted sense, we think, being easily ascertainable, always persistent, and wholly sufficient for practical purposes. In any case we strangely assume that we may safely play upon all the chords of imagery, reserving without difficulty for serious use a body of terms which are direct expressions of "fact."

But the suggestion now made is that this is precisely one of the most dangerous of presuppositions. It is not the man who has mystified himself, or who wishes to mystify others; it is not the man who confounds the reality of the logical with that of the actual; it is not the man who takes emotion for proof and notion for fact; it is none of these, but the man who is clear on such points and sees that they must be drawn out into clues and followed up to the uttermost, if we would know where we are—who is beginning to see that the paramount need of the moment is the "torpedo-shock" of the question, What do we really mean? He knows that the off-hand vagueness and ready-made confusion, which too often from sheer ignorance usurp the name of common-sense, are in the long run its most deadly enemies.

We may look forward then with a new hope to the rise of a systematic inquiry on the subject of meaning and its changes. This would entail the much-needed work of classifying metaphor, and might even be found to point to the existence of a third value, neither wholly literal, nor wholly figurative, as that of a large proportion of ordinary expression. From this and like causes, in this age of rapid changes due mainly to scientific conquest, we can all readily put to each other questions to which either a "yes" or a "no" must be equally misleading. And men of science have specially realised this, since many a time they have been unjustly credited with evasion, or with untenable or immoral views, because they either answered to a "plain question": "In one sense, yes; in

another, no," or else gave an answer which could not fail to be misunderstood by a mind which was governed by unconscious survivals. So far as we are in touch with modern culture, we no longer mean what we must have meant in the days before Copernicus, when we say, for instance, "the sun rises." When we speak of infection, we no longer mean what we used to mean before microbes had been heard of. When we talk of "heat," we no longer mean what we used to mean even fifty years ago. And when a man says that he believes in the sun, the planets, the cosmos, in the heavens and the earth, in mind and matter, in soul and body, in spirit and flesh, he cannot, if he would, mean just what his forefathers meant, or indeed anything at all absolutely and finally. Whether we will or no, the meaning of such terms is changing on our very tongues, and ever swaying between the extremes which we call literal and metaphorical; "heaven," e. g., ranging in value from sky to human destiny; "earth," from soil to the visible Home of Man. We may appeal, and are right to appeal to "hard, dry" facts; but we perforce put something out of ourselves even into these. They become "facts" under the quickening touch of "mind," while that emerges from a dim world of prepossession, bequeathing us many a primitive legacy from pre-intelligent sentience, and perhaps from little-suspected sources lying yet further back. For instance, primitive terror in its "superstitious" forms tended to represent man as inferior to and dependent on powers of some sort;—and this was true to natural order in the fact that his very world was not self-centred and was dependent for its best boons upon a greater than itself. As language advanced, he began quite naturally to express his meaning in "appropriate metaphors"; to use, e. g., the figures of light and then of sight to describe what he had, as we now say, "in his mind," or what sense-messages, as we now say, had "put into his head." For "something told him" that light, as it had been the first pleasure, was also the great means of life.\* And he "saw," in however gro-

---

\* "Light affects the new-born infant at an early stage, although in this as in other respects individual differences immediately assert themselves. The child seems to take pleasure in an excitation of light and tries (even on the second day

tesque a guise, the unbroken continuity of the organic and the inorganic, and perhaps even more clearly than most of us yet do, that of so-called "matter" and so-called "mind." Perhaps in some cases, therefore, he chose his imagery better than (after long ages of dualism carried to the splitting-point) we generally do now.

He knew again that the senses after all, stern masters though they were while life was so hard to live, had very narrow limits; and that the world was in some sense fuller and richer of life than it had seemed to be as known directly through them.\* And then he wondered,—and began to ask. He was the first Questioner. As Prof. Max Müller says,† "the greater the savagery, the dullness, the stupidity with which *Homo sapiens* began, the greater the marvel at what must have been from the first, though undeveloped, in him, and made him in the end what we find him to be in the men of light and leading of our own age." The mere fact of the question is the riddle to be solved. For certainly the beasts had not taught him either to wonder or to ask. And not merely insatiable questioning but something more here rises to challenge our attention and to demand reflection. Man is the first critic because he is the first idealist; the first to be discontented, to protest, to see life as a "ravelled end,"

---

after birth) to turn towards it in order to retain it." (*Outlines of Psychology*, H. Höfding, p. 4.)

"Under the influence of light the conversion of inorganic matter into more complex organic matter takes place, more particularly in the green cells of plants." (*Ibid.*, p. 315.)

"It is certainly necessary to look further back than the visual sensations to understand the great influence of light on all creatures that have sensuous perception. . . . Light is thus one of the most elementary conditions of life." (*Ibid.*, p. 229.)

\* It must be borne in mind that I am using psychological terms in a merely general sense. Among many examples of such use I may quote Sachs (*Physiology of Plants*, p. 200) and F. Darwin (*Address to Biological Section, Brit. Assoc.*, August 1891), who speaks of the plant as "perceiving" external change, as "recognising" the vertical line, "knowing" where the centre of the earth is, "translating" stimulus, etc. See also Darwin's *Forms of Flowers*, p. 90.

Again Prof. M. Foster uses the word "will" in the same general (rather than metaphorical) sense. (*Text Book of Phys.*, Part 3, pp. 1059, 1062, 1063.) Modes of reaction are thus verbally linked with consciousness, and we must remember that all our terms for the "mental" belong first to the "physical," and that many are reciprocally used in the two spheres.

† *Natural Religion*, p. 243.

as something which is incomplete and speaks of something more. Surely in any case the step of all steps, the deepest yet the narrowest line to cross is the step from something noticed or found, from something which happens or appears, from something which somehow affects us, excites us, to its significance.

Of course in one sense it is impossible to fix any definite moment as that of the advent of this "significance." Animals interpret each others' aspect and gestures, often indeed with a subtle precision which to some extent we have lost. But interpretation in the intellectual sense becomes, from our present point of view, that which makes us really human. Our progress, our ascent, is mainly marked in this. The root-question to ask in gauging levels of humanity is, how much can a given man interpret or translate, of a world that teems with meaning? How much can he truly classify and relate, how much can he rightly infer and conclude, how much can he account for, explain, and fruitfully apply? For after all, results must be our tests. Claims and credentials are nothing, unless they can show this warrant; whereas truth which can use all facts alike is the very means of survival. Man begins by doing, by acting out impulse; then he learns to "think" little by little, observing, questioning, pondering, testing his way onward and upward. And throughout his patient, often painful journey, he is himself perpetually challenged. Nature's stimulating appeals rain upon him ceaselessly from every side; she orders him to master all her meanings. He responds:—at first again, "blindly," but ever rising to higher grades of answer. Both deficiency and error are no doubt more or less present in all mental response to actual fact—that is, in all experience. But the essence of sanity from the first lies in corrective power. Everywhere there is either absence of notice, absence of response, or there is experimental activity (broadly speaking) corrected at once; automatically or by the combined effect of the related organic activities. For instance, in health, if in using the hand, one finger accidentally goes astray, the coördinating muscles promptly recall it to a "sense of duty." We know how the same rule works in speech and writing. Therefore, unless "voluntary"



and "capricious" (or "willing" and "wilful") are synonyms, the advent of volition ought not to mean the abrogation of this rule.

It is, however, obvious that "natural selection" can only operate in cases where death or sterility is the consequence of failure in adaptation and appropriate reaction, or segregation the consequence of excessive variation. But the point here is, why does not a tendency to correction, thus established, survive automatically in incipient imagination and therefore in language? It seems almost a burlesque of popular notions of "free will" to suppose that the moment the death-penalty is taken off, the new-born intelligence, unique in adapting power, should go astray persistently without let or hindrance. Many now merely formal or even jocular customs still prevailing\* testify, as legacies from a remote time of danger needing to be averted, to the strength of tendencies organised during myriads of generations under the pressure of the struggle for life. Why does not this apply to language?

But sight gives us here perhaps the most suggestive lesson; for therein the ascending series seems especially gradual and unbroken. The eye, unlike the other organs of sense is an outgrowth of the very brain itself; "the retina . . . is in reality a part of the brain."† We may well therefore connect its functions specially with the thought of significance; it is the main out-post of our central means of interpretation.

Taking the stages in the evolution of the eye, and using a short summary of these as a convenient means of testing the value of a conspicuous group of metaphors, we find (1) a mere dint; (2) this dint deepening into a pit which (3) gradually narrows. Hitherto we have had only light and darkness; now we have an image, though but a dim one. (4) The pit is closed by a transparent membrane; this is protection, not obstacle. (5) The lens is formed by deposit of cuticle. Gain; increased distinctness and increased brightness. The lens can focus a larger pencil of rays from each part of the ob-

---

\* See Dr. Tylor's *Primitive Culture*, Vol. I, pp. 74-121; *Ibid*, Vol. II, pp. 297-298, 404-428.

† Dr. M. Foster's *Text-Book of Physiology*, Part 4, p. 1142.



ject to each part of the retina (corresponding point). Finally, iris and eyelid protect the perfected eye more completely, and enable it both to bear more light and to discern more detail.

If mental development were in any way comparable to this physiological development, we should expect to find (1) something which would naturally be described as a vague or dim "impression"; gradually deepening, becoming more distinctly localised as the stimulus became more definitely "impressive." (2) We should begin to find "reality" and the "unreal"; "fact" and "fancy"; "truth" and "falsehood"; knowledge and ignorance,—contrasted as "light" and "darkness."\* And this is what actually happens.†

(3) Still our mental "impression" would not as yet afford us an image; "imagination" only now comes upon the scene and begins to work (though as yet "dimly") upon the objects which more and more "incisively" "impress" us. (4) Our deep "impression" is closed in one sense from direct contact with the outward; mental vision becomes more delicately differentiated from the emotional "touch," however this may be specialised and intensified. But what secludes this is transparent; it is protection, not obstacle. We rightly speak of mental penetration; of "seeing through" a superficial limit. The mental "lens" is formed from that "continuum" on which the original "impression" was made. The gain now is increased distinctness and brightness. More rays of "light," of reality, of fact, of truth, of knowledge, can now be focussed from each part of a given object (or group of objects) of mental attention and interest; to each part of the responsive "sensitive plate" of the mind. Finally we

---

\* I am of course merely directing attention to the relative aptness of metaphors of mental process familiarly in use in our own language. It is obvious that before any inference could be made from them as to the value of unconscious analogies of imagery, we should have to make appeal to comparative philology and embark on a wide inquiry, for which the English-speaking races must wait for Dr. Murray's epoch-making Dictionary.

† It must be borne in mind that the whole process presupposes the other senses or at least the temperature-sense, the "muscular sense" and that of touch; that is, we should have "felt" simple stimuli "emotionally" before we "saw" things intellectually. And hearing is not now in question, though in that, too, we should find the same character of development, i. e. the same prominence of the protective and discriminative factors.

have, so to speak, increased protective growth. The function of what are called academic culture and scientific method, with their fastidious standards of fitness and accuracy, may perhaps represent something not unlike that of iris and eyelid, enabling the developing mind safely to bear intenser illumination and also to discern more subtle detail.

It must be admitted that so far as it goes this is a significant psychological parable. However slender its right to the position even of a working clue to early stages of mind, it has at least better credentials than many accepted analogies can claim. And throughout its course what most "impresses" itself upon one's mind is the steady maintenance of invariable reaction to excitation, and of protection from unfavorable stimulus.

"Mind," as Mr. Shadworth Hodgson tells us,\* "is a fiction of the fancy." Of course this is open to the retort that so is fancy a fiction of the mind, or fiction a fancy of the mind.

Psychology is full of these see-saws of paradox, depending on vicissitudes of linguistic usage or context. But mind is indeed a fiction of the fancy when we endow it with a fanciful freedom from all ties with what we call physical reality. For this, however plainly we may recognise its genesis in our own sequences of sense-impression, does practically through them rule us with an undeviating severity which neither fiction nor fancy can tamper with. Therefore, if we think it absurd to suppose that there may possibly be an undiscovered vein of authentic and really indicative symbol or metaphor running through the arbitrary meshes of fanciful custom or mythical term, we are in fact implying that all clues from the original interactions of physical energy were entirely lost when what we call "mind" issued first in language. But at all events we may be sure that links between the "physical" and the "psychical" are everywhere drawing closer and emerging clearer, however buried as yet in a mass of the fantastic or the arbitrary.

It will probably be objected that we can never hope to find these. No doubt such an attempt must mean the patient work of

---

\* *Brain*, June, 1891. P. 13.

many lifetimes, and at best we could not hope to lay bare the ultimate point of "origin." But yet it seems worth trying. For after all, even the results which may appear so scanty in the tracing back of language, are already rich far beyond what could have been hoped for a few generations back. And if it were once realised that such a line of work might have practical and far-reaching issues; if we really saw that thus some barren disputes and speculations might cease to bar the way or to waste some precious energies, we should be more than rewarded. In his "Dialogues of Plato"\* Professor Jowett warned us twenty years ago of our linguistic dangers, repeating his warning with greater emphasis and in fresh forms in the admirable essays added in the edition just published. He urges that the "greatest lesson which the philosophical analysis of language teaches us is, that we should be above language, making words our servants and not allowing them to be our masters." "Words," he tells us, "appear to be isolated but they are really the parts of an organism which is always being reproduced. They are refined by civilisation, harmonised by poetry, emphasised by literature, technically applied in philosophy and art; they are used as symbols on the border-ground of human knowledge; they receive a fresh impress from individual genius, and come with a new force and association to every lively-minded person. They are fixed by the simultaneous utterance of millions and yet are always imperceptibly changing:—not the inventors of language, but writing and speaking, and particularly great writers, or works which pass into the hearts of nations, Homer, Shakespeare, Dante, the German or English Bible, Kant and Hegel, are the makers of them in later ages. They carry with them the faded recollection of their own past history; the use of a word in a striking and familiar passage, gives a complexion to its use everywhere else, and the new use of an old and familiar phrase has also a peculiar power over us." Then he reminds us of what we too often forget; that "language is an aspect of man, of nature, and of nations, the transfiguration of the world in thought, the meeting-point of the physical and mental sciences, and also the

---

\* Vol. I, pp. 235-286, 293.

mirror in which they are reflected, an effect and partly a cause of our common humanity, present at every moment to the individual and yet having a sort of eternal or universal nature."\*

Nowadays, when we feel most scathingly superior, we often announce that we fail to see and have yet to learn something which, bringing us, it may be, a really fresh idea, unpleasantly stirs misgiving. Let us go on with our greeting, meaning it in good earnest. For when we honestly and without reservation consent to learn and succeed in seeing some things now waiting for our study we may find more than we look for, within reach. After all it may be that

---

\* The following, among many pregnant passages between which it is difficult to choose, may be further quoted :

"The famous dispute between Nominalists and Realists would never have been heard of, if, instead of transferring the Platonic ideas into a crude Latin phraseology, the spirit of Plato had been truly understood and appreciated. Upon the term substance at least two celebrated theological controversies appear to hinge, which would not have existed, or at least not in their present form, if we had 'interrogated' the word substance, as Plato has the notions of Unity and Being. Those weeds of philosophy have struck their roots deep into the soil, and are always tending to reappear, sometimes in new-fangled forms; while similar words, such as development, evolution, law, and the like, are constantly put in the place of facts, even by writers who profess to base truth entirely upon fact. In an unmetaphysical age there is probably more metaphysics in the common sense (i. e. more *a priori* assumption) than in any other, because there is more complete unconsciousness that we are resting on our own ideas, while we please ourselves with the conviction that we are resting on facts. We do not consider how much metaphysics are required to place us above metaphysics, or how difficult it is to prevent the forms of expression which are ready made for our use from outrunning actual observation and experiment." (Vol. IV, p. 39-40.)

"To have the true use of words we must compare them with things; in using them we acknowledge that they seldom give a perfect representation of our meaning. In like manner when we interrogate our ideas we find that we are not using them always in the sense which we supposed. (*Ibid.*, p. 41.)

"Many erroneous conceptions of the mind derived from former philosophies have found their way into language, and we with difficulty disengage ourselves from them. Mere figures of speech have unconsciously influenced the minds of great thinkers. Also there are some distinctions, as, for example, that of the will and of reason, and of the moral and intellectual faculties, which are carried further than is justified by experience. Any separation of things which we cannot see or exactly define, though it may be necessary, is a fertile source of error. The division of the mind into faculties or powers or virtues is too deeply rooted in language to be got rid of, but it gives a false impression. For if we reflect on ourselves we see that all our faculties easily pass into one another, and are bound together in a single mind or consciousness; but this mental unity is apt to be concealed from us by the distinctions of language." (*Ibid.*, p. 155.)

we have really failed to see and have really yet to learn the part that meaning—whether of language or of conduct—and its change or variations (successive or simultaneous) have had throughout the mental history of man. It may be that while the ordinary modern metaphor like the ordinary modern analogy is a mere rhetorical device, some few images may be found to hail from an altogether deeper and more authentic source. Many, however ancient, are not of course any the more valid for their antiquity. On the contrary it is obvious that such a figure for instance as “foundation” or “basis” to express an ultimate necessity, is a survival from days in which the earth was supposed to require and to possess such fixed and immutable base, while the analogies, e. g. between the human and the inorganic orders are now reversed. We import the idea of mechanism and invariable sequence into the former instead of exporting conscious intention into the latter; we level down where our forefathers levelled up. And we have to beware of the subtle atmosphere of fallacy thus introduced.

But on the other hand it is conceivable that some may be found to belong to that as yet mysterious energy on which natural selection plays and of which variation is the outcome or the sign. What we find in language may thus be, as it were, not merely the “scarred and weather-worn” remnant of geogenic strata but sometimes the meteorite, the calcined fragment of earlier worlds of correspondence, ultra-earthly, cosmical. We have no right to do more than ask and seek and knock at the gates of fact in such a matter as this. But until that has been done; until at least we have tried the experiment; have looked for grades of validity in metaphor and analogy in the light of modern science, and still more, have recognised clearly the powerful though hidden effects upon us of organised mental picture brought in surreptitiously with verbal imagery, or by comparison; we cannot know whether such an effort is worth while or no, or what harvest it may yield. For after all, whether we like it or no, we *are* heliocentric; the world and all that is in it is cosmically generated. As far as science—and experience—are concerned, anything which says “I don’t admit that origin; I claim to have produced myself or to have been originated by and on the



earth in a final sense," must make good its geocentric or self-creating pretensions with overwhelming cogency and rigorous proof. We appeal to the "light" of science, of reason, of experience, against the "darkness" of superstition, myth, and mysticism. And we are thus appealing not to the supersensuous or supernatural but to the ultra-satellitic. Not only beyond the earth and touch but beyond the atmosphere and hearing is the home of the light that lightens our small world, calling forth in us the answer of sight. And the manifold revelations through this sense—in its mental as well as bodily character—press upon us, with greater and greater insistence, the wealth of our relations with the universe.

In any case, *meaning*—in the widest sense of the word—is the only value of whatever "fact" presents itself to us. Without this, to observe and record appearances or occurrences would become a worse than wasteful task. Significance is the one value of all that consciousness brings, or that intelligence deals with; the one value of life itself. But perhaps for this very reason we have taken it too much for granted. It may need a more definite place in psychological inquiries. It may have unsuspected bearings.

When we have realised better what manner of gift this is, we may find answers of which we have prematurely despaired; answers coming not from the "mystical" point of the horizon of experience, but rather from the neural. And let us beware here of repeating the pre-scientific error of postulating, for figurative purposes, a flat earth on which whatever lies beyond "horizons" never meets! But, it may be said, why not? Why should it signify? Why, but because Man is the one not merely who thinks, or speaks, or writes, or looks upwards, but the one who *means*, the one who *is* the meaning of much, and makes the meaning of all; the one who will not tolerate the unmeaning anywhere in experience. Nothing remains but that he should interpret rightly; that he should apprehend nature and experience in their true sense. It is the glory of science that she puts this aim in the forefront of her labors. She tells us that nothing can be done without assumption and hypothesis as to the meaning of things. But that significance belongs to the very spring to which we owe her dauntless energy and her accumulating triumphs.



Why should it signify? The very term answers us. To "signify" is the one test of the important. The significant is alone worth notice. We inherit a mode of thinking which we are at last becoming able to criticise in the light of knowledge gained by observation and experiment. But if we persist in using, without warning to hearer or reader, imagery which has no longer either sense or relevance, or which tends to call up a false mental picture or to perpetuate an else decaying error, we shall to that extent forfeit the very gifts which science brings us, and must not complain of the obstinate persistence of ideas which needlessly divide us. At least, let us try to realise more clearly what we are losing in this way. The danger even thus must needs be lessened; detected bogies become powerless for mischief; but we need not leave their ancient home empty, swept, and garnished; stores of verified analogy are waiting to replace them. The figurative must not indeed be pressed, still less literalised. But we may see that it conveys a true, rather than a false impression; and harmonises with, instead of contradicting that which we most surely know.\*

It may be said in a true sense that the function of the hero, the saint, the poet, is to bring the world to *life*. But the function of the devoted servant of science, the critical scholar, the true philosopher, is to bring the world to *truth*, in a sense only now becoming possible. Through the last discipline alone, in its most thorough applications, can we hope fully to master the scope of all significance and the laws of all its workings. Then, indeed, we may further hope to read with a fresh eye the Significance of Life.

VICTORIA WELBY.

---

\* I would gladly forward to any reader interested in a question of such practical bearings, a small collection of *Witnesses to Ambiguity* gathered from representative sources, and a pamphlet which was circulated at the International Congress of Experimental Psychology, held in London, August, 1892, giving examples of the mischievous confusions suggested by the use, even among writers of the first rank, of the metaphor, *Inner and Outer*. Prof. H. Sidgwick, the president, in his opening address, expressed the opinion that very important work of this kind remained to be done, and added, "I have much sympathy with the view urged in a pamphlet that I have received for distribution among members of the Congress, which illustrates forcibly the confusion caused by one established antithesis of terms. Professor Sully and others have expressed themselves strongly in the same sense."

## REPLY TO THE NECESSITARIANS.

### REJOINDER TO DR. CARUS.

§ 1. In *The Monist* for January, 1891, and in the number for April, 1892, I attacked the doctrine that every event is precisely determined by law. Like everybody else, I admit that there is regularity: I go further; I maintain the existence of law as something *real and general*. But I hold there is no reason to think that there are general formulæ to which the phenomena of nature *always* conform, or to which they *precisely* conform. At the end of my second paper, the partisans of the doctrine of necessity were courteously challenged and besought to attempt to answer my arguments. This, so far as I can learn, Dr. Carus alone, in *The Monist* of July and October, 1892, has publicly vouchsafed to do. For this I owe him my particular thanks and a careful rejoinder.

§ 2. I number the paragraphs of his papers consecutively. The following index shows the pages on which those paragraphs commence, and the numbered sections of this rejoinder in which they are noticed.

DR. CARUS	REJOINDER	DR. CARUS	REJOINDER	DR. CARUS	REJOINDER
Vol. II, p.560	¶ 1	Vol. II, p.566	¶21 §13.14	Vol. II, p.571	¶41
" "	2 §28	" "	22 3.12.22	" "	42
" "	3 20	" "	23 12	" "	43
" 561	4 23.27	" "	24 3.13.14	" 572	44 23
" "	5 21	" 567	25 8	" "	45
" "	6 18	" "	26 8	" "	46 5.23
" "	7 18	" "	27 8.22	" 573	47
" 562	8 18bis.	" "	28 20.22	" "	48 7
" "	9 21	" 368	29 12	" "	49 7
" "	10	" "	30 22	" "	50 7
" 563	11 12.21.22	" "	31 22 bis	" 574	51 7.25
" "	12 19	" "	32 22	" "	52
" "	13 19	" 569	33 22	" "	53 25
" 564	14 3.12bis.22	" "	34 22	" "	54
" "	15 8 ter, 16	" "	35 8	" "	55 25 bis
" 565	16 21	" "	36 29	" 575	56 17 bis
" "	17 3	" "	37	" "	57 17 bis
" "	18 3	" 570	38	" "	58 17.25
" "	19 13 note	" "	39	" "	59 17
" 566	20 14	" "	40	" "	60 17

DR. CARUS	REJOINDER	DR. CARUS	REJOINDER	DR. CARUS	REJOINDER
Vol. II, p. 576	¶ 61 § 7.17.25 bis	Vol. III, p. 73	¶ 110 § 6	Vol. III, p. 85	¶ 139 § 15.24
"	62 17.21	"	111 6	"	160 15.24
"	63 17	"	112 6	"	161 15 bis
"	577 65 17 bis	"	113 6.11	"	162 15
"	66 25	"	114 6	"	163 5-14
"	67 25 bis	"	115 6	"	164 14
"	578 68 6.7	"	75 116 6.7	"	87 165 4.14
"	69 17	"	117 6	"	166 14
"	579 70 6	"	76 118	"	167 14
"	71 3	"	119 9	"	168 27
"	580 72 3	"	120 6.16	"	169 27
"	73 3	"	121 14	"	88 170 27
"	74 3	"	122 11	"	171 27
"	75 3	"	77 123 3	"	172 27
"	581 76 3	"	124 10	"	173
"	77 3-II	"	125 7	"	174
"	78 3	"	78 126 8	"	89 175 27
"	79 21	"	127 8	"	176 27 bis
"	582 80	"	128 29	"	177 27
"	81 29	"	79 129	"	178 27
"	82 29	"	130	"	179
"	83 29	"	131	"	180 30
Vol. III, 68	84 5	"	132	"	181
"	85 27	"	133 27	"	182
"	86 12	"	134	"	90 183 30
"	69 87 5.15 bis	"	135	"	184
"	88	"	136	"	185 27
"	89	"	137 15	"	186 27
"	90	"	138 15	"	91 187 27
"	91 5	"	139 5.15	"	188
"	92 5	"	140 15	"	189
"	93 5	"	141 15	"	190
"	94 5	"	142 15.25	"	92 191 4
"	95 3	"	143 15.24	"	192 27 bis
"	96 4-II	"	144 15 bis	"	193 20.27 bis
"	71 97	"	145 15 bis	"	93 194
"	98	"	146 15 bis	"	195 8
"	99	"	147 15 ter	"	196 8
"	100	"	82 148 15	"	94 197
"	72 101	"	149 12.15	"	198 6
"	102 11	"	150 15 bis. 25	"	199 30
"	103 6	"	83 151 15.24	"	200
"	104	"	152 15.24	"	201
"	105	"	153 15.24	"	95 202
"	73 106 11	"	154 15.24	"	203 20.29
"	107 6	"	155 15.24	"	204 29
"	108 6	"	84 156 15 bis	"	96 205 20
"	109 6	"	157 15	"	206
		"	158 15.24	"	207

§ 3. Dr. Carus's philosophy is hard to understand. Some phrases which he frequently uses lead the reader to imagine that he is listening to an old-fashioned Königsberg Kantian. What, then, is our surprise when we find (¶ 14) that he sneers at the Kantian, Sir William Hamilton (whom he calls Mr. Hamilton) as having "no adequate conception of the *a priori*." In his "Ursache, Grund und Zweck" (1883), an admirably clear and systematic exposition of much of his thought, he takes a Schleiermacherian view of the *a priori*. He admits it to be founded in the universal conditions of cognition; but he thinks it is among the objective rather than the subjective conditions. This is an opinion to which Hamilton is also at times inclined. It is a weak conception, unless the whole distinction between the inward and the outward world be reformed in

the light of agapastic and synechistic ontology. For to deny that the *a priori* is subjective is to remove its essential character; and to make it both subjective and objective (otherwise than in the sense in which Kant himself makes it objective) is uncalled for, and is cut off by Ockham's razor. But when synechism has united the two worlds, this view gains new life.

Another thing which has astonished me is Dr. Carus's extravagant laudation (§ 17) of Venn's highly enlightened and remarkably bright-thinking, yet blundering little book, "The Logic of Chance."\* This is the way he speaks of it: "This admirable work, we will make bold to say, marks a new epoch in the study of logic." He adds that it "paves the way which Mr. Peirce has actually followed." But the question of the nature of probability had long before that publication engaged the attention of some of the most powerful intellects in England; and my opinion concerning it was fully made up before I saw the book. I do not think I learned anything from that except a classification of the philosophies of probability. However, after all his eulogy, Dr. Carus only uses the book to quote from it Mill's rewording of Kant's definition of causation, which he would better have quoted direct.

Let me say, not to Dr. Carus, but to the younger generation of readers, that if they imagine that Hamilton, because he is antiquated, is not worth reading, they are much mistaken. The Scotistic elements of his philosophy, and his method in the notes on Reid are especially worthy of attention. As for Mill, though his philosophy was not profound, it is, at least in his "Examination of Hamilton," admirably set forth. Whoever wishes to appeal to the American

---

\* J. S. Mill had in the first edition of his *Logic* decisively taken an objective conception of chance and probability; but in his second edition he had become puzzled and had retracted, leaving that chapter, and with it his whole logic, a melancholy wreck, over which the qualified reader sighs, "And this once seemed intelligible!" Venn in the first edition of his book set forth the same objective conception with great clearness, and for that he was entitled to high praise, notwithstanding his manifest inadequacy to the problems treated. But in his second edition, he too has fallen away from his first and correct view, and has adopted a theory which I shall some day show to be untenable. Venn's whole method in logic, as well as his system, is in my opinion of the weakest.

philosophical mind needs to be quite familiar with the writings of these two men.

Dr. Carus himself accepts all that I hold for erroneous in Kant's definition of causation as universal and necessary sequence. Mill merely substitutes the exacter words *invariable* for "universal," and *unconditional* for "necessary."\* In giving his form of the definition, Mill shows why it is not applicable to the sequence of day and night, namely, that that is not necessary. Yet Dr. Carus writes (§ 18) of this very same sequence as if it came under Mill's definition!†

Again, why should he make it "the immortal merit of the great Scotchman" (§ 22), that is, of Hume, that he admitted the truth of Leibniz's principle?

The famed puzzle of causation is peculiarly understood by Dr. Carus. The difficulties which the perusal of Hume suggested to the mind of Kant,‡ were such as belonged to all categories, or general conceptions of the understanding. The precritical Kant inherited a very decided nominalism from Leibniz and Wolf; and the puzzle for him was simply the usual difficulty that plagues nominalism when it finds itself confronted with a reality which has an element of generality. Necessity is, I need hardly say, but a particular variety of universality. But Dr. Carus (§ 24) passes over this, to dwell upon an entirely different objection to causation, namely, that it seems to be a creation out of nothing, and a miracle.

I find myself equally at cross-purposes with him, when in §§ 71-77, he speaks of the prevalent views of logicians concerning *comprehension*. This word, in logic, measures the amount of predicates or marks attached to a conception; but Dr. Carus's criticisms seem to be based upon the idea that by comprehension is meant

\* Mill often did good service in substituting precise terms for ambiguous ones; as when in speaking of mathematical conclusions he prefers to say they are legitimate deductions rather than that they are necessary.

† In his *Ursache, Grund und Zweck*, Dr. Carus alludes to this passage. But he prefers the treatment of the question by Reid, whom he calls Mill's opponent (*Gegner*).

‡ It is of comparatively little consequence what Hume really meant. The main interest is in what Kant thought he meant.

logical breadth, or the amount of subjects to which the conception is applicable.

I am simply gravelled by his remarks (§ 95) concerning sundry English words.

No more do I know what to make of his praise (§ 123) of the German translation of a French phrase used in the theory of functions, meaning *univocally determined*.

§ 4. One habit which goes far to obscure Dr. Carus's meaning is that whenever he finds his opinion at variance with a familiar saying, instead of rejecting that formula, he retains it and changes the meaning. This is calculated to throw the whole discussion into confusion. Thus, nothing is more certain than that the so-called "law of identity," or  $A$  is  $A$ , was intended to express the fact that every term is predicable of itself. But Dr. Carus, simply because he finds that "meaningless and useless" (§ 96), thinks himself authorised to confuse the terminology of logic by making this formula,  $A = A$ , under the same old name, mean that things to which the same name is applicable are for some purpose equivalent.

In like manner, he changes the meaning of the word *freedom* (§ 165), so that the distinction between those who maintain and those who oppose the freedom of the will may, in words, disappear. It seems scarcely defensible for a thoroughgoing necessitarian, such as he is, to fly the flag of Free Will.

He, also, changes the meaning of *spontaneity* so far that, according to him, "masses gravitate spontaneously" (§ 191), and so pretends that his doctrine does not suppress the spontaneity of nature!

§ 5. There are other questions of terminology in which I am unable to agree with Dr. Carus. Thus, when I define necessitarianism as "the theory that the will is subject to the general mechanical law of cause and effect," Dr. Carus (§ 139) wishes to delete "mechanical." But the result would be to define a doctrine to which the advocates of free will would generally subscribe, as readily as their opponents. In order properly to limit the definition, it is quite requisite to exclude "free causation." By "mechanical" causation, I mean a causation entirely determinative, like that of dynamics, but not necessarily operating upon matter.



Dr. Carus mentions (§ 84) that there are several different ideas to which the term necessity is applied. It seems to me that what lies at the bottom of all of them is the experience of reaction against one's will. In the simplest form, this gives the sense of reality. Dr. Carus himself admits (§ 46) that reality involves the idea of inevitable fate. Yet philosophical necessity is a special case of universality. But the universality, or better, the generality, of a pure form involves no necessity. It is only when the form is materialised that the distinction between necessity and freedom makes itself plain. These ideas are, therefore, as it seems to me, of a mixed nature. Dr. Carus (§§ 91-94) insists that by the necessary, he wishes to be understood to mean in all cases the *inevitable*. This is the idea of *fate*, and is not the conception which determinists usually attach to the term necessity. Yet he does not appear to be quite consistent. At one time (§ 88), he carefully distinguishes necessity from fate. At another time (§ 163), every element of compulsion is to be excluded from the conception of necessity.

§ 6. One important key to Dr. Carus's opinions is the recognition of the fact that, like many other philosophers, he is a nominalist tinged with realistic opinions.

He says (§ 103), that "there is no need of discussing the truism that, properly speaking, there is no absolute sameness." Now, upon the nominalistic theory, there is not only no absolute or numerical identity, but there are not even any real agreements or likenesses between individuals; for likeness consists merely in the calling of several individuals by one name, or (in some systems) in their exciting one idea. On the other hand, upon the realistic theory, the fact that identity is a relation of reason does not in the least prevent it from being real. On that theory, it is real unless it is *false* that anything is itself. Thus, upon either theory, identity is just as real as similarity. But Dr. Carus, being a nominalist leaning toward realism, is inclined to make dynamical relations real, and second-intentional ones unreal. This opinion, I think, is a transitional one.

The declaration (§ 198) that "natural laws are simply a description of nature as nature is," and that "the facts of nature ex-

press the character of nature," are nominalistic. But in another place (§§ 107-116), he says distinctly that uniformities are real.

He says (§ 70), "Mr. Peirce attempts to explain natural laws as if they were concrete and *single facts*." This is eminently nominalistic. The nominalist alone makes this sharp distinction between the abstract and the concrete,\* which must not be confounded with Hegel's distinction for which the same words are used. The nominalist alone falls into the absurdity of talking of "single facts," or *individual generals*. Yet Dr. Carus says (§ 68) that natural laws describe the facts of nature *sub specie aeternitatis*. Now I understand Spinoza to be a realist. In § 117 he considers it "settled" "that there are samenesses." This is realistic. But in § 120, he holds "the whole business of science to be to systematise the samenesses of experience," which is nominalistic.

§ 7. Dr. Carus seems to be in some doubt as to how far evolutionism ought to be carried. In §§ 48-51, he seems to side with my contention that it should be thoroughgoing. In § 116, he makes intellect an evolution from feeling. Yet he is sometimes (§ 125) "inclined" to say the world never was a chaos; he sometimes (§ 61) thinks it weak to suppose that real chance begets order; and he sometimes (§ 68) goes so far as to pronounce eternity to be the *conditio sine qua non* of natural law.

§ 8. Every reader of *The Monist* knows that our good editor's great word is "formal law." The clearest statement he has ever made of this doctrine I find in the following two sentences (§ 127):

"The *a priori* systems of thought are . . . constructions raised out of the recognition of the formal, i. e. relational samenesses that appear in experience. All possibilities of a certain class of relations can be exhausted and formulated in theorems." †

This is perspicuous. For example, of pairs, we can easily show that there are but two forms  $A:A$  and  $A:B$ . This proposition,

---

\* Along with the distinction, I would of course do away with this use of the words *abstract* and *concrete* to which no clear idea can be attached, as far as I can see.

† I cannot but disapprove of this use of the word "construction" to mean a studied theory, because the word is imperatively required in the theory of cognition to denote a mathematical diagram framed according to a general precept.

—theorem if you will,—exhausts the possibilities. If we make believe there is no danger of falling into error in mathematical reasoning,—and one danger, though not, perhaps, a very serious one, is eliminated,—then this proposition is absolutely certain. But I will say, at once, that such a proposition is not, in a proper sense, synthetic. It is a mere corollary from the definition of a pair. Moreover, its application to experience, or to possible experience, opens the door to probability, and shuts out absolute necessity and certainty, *in toto*.

Concerning points like this, Dr. Carus, in company with the general body of thinkers, is laboring under a great disadvantage from not understanding the logic of relatives. It is a subject I have been studying for a great many years, and I feel and know that I have an important report that I ought to make upon it. This branch of logic is, however, so abstruse, that I have never been able to find the leisure to translate my conclusions into a form in which their significance would be manifest even to a powerful thinker whose thoughts had not long been turned in that direction. I shall succeed in doing so, whenever I can find myself in a situation where I need think of nothing else for months, and not before. That may not be for thirty years; but I believe it is the intention of providence that it should be. Meantime, I will testify, and the reader can take my testimony for what he thinks it is worth, that all deductive reasoning, except that kind which is so childishly simple that acute minds have doubted whether there was any reasoning there,—I mean non-relative syllogism,—requires an act of choice; because from a given premise, several conclusions,—in some cases an infinite number,—can be drawn. Hence, Dr. Carus is altogether too hasty in his confidence (§§ 195, 196) that general thinking machines “are not impossibilities.” An act of original and arbitrary determination would be required; and it seems almost evident that no machine could perform such an act except within narrow limits, thought out beforehand and embodied in its construction. Moreover, positive observation is called for in all inference, even the simplest,—though in deduction it is only observation of an object of imagination. Moreover, a peculiar act which may properly be called

*abstraction*\* is usually required, consisting in seizing evanescent elements of thought and holding them before the mind as "substantive" objects, to borrow a phrase from William James. At the same time, the process I am describing, that is, relative deduction, is perfectly general and demonstrative, and depends upon the truth of the assumed premises, and not, like inductive reasoning, upon the manner in which those premises present themselves.

But the application of the logic of relatives shows that the propositions of arithmetic, which Dr. Carus usually adduces as examples of formal law (§ 15), are, in fact, only corollaries from definitions. They are certain only as applied to ideal constructions, and in such application, they are merely analytical.

The truth is our ideas about the distinction between analytical and synthetical judgments is much modified by the logic of relatives, and by the logic of probable inference. An analytical proposition is a definition or a proposition *deducible* from definitions; a synthetical proposition is a proposition not analytical. Deduction, or analytical reasoning, is, as I have shown in my "Theory of Probable Reasoning," a reasoning in which the conclusion follows (necessarily, or probably) from the state of things expressed in the premises, in contradistinction to scientific, or synthetical, reasoning, which is a reasoning in which the conclusion follows probably and approximately from the premises, owing to the conditions under which the latter have been observed, or otherwise ascertained. The two classes of reasoning present, besides, some other contrasts that need not be insisted upon in this place. They also present some significant resemblances. Deduction is really a matter of perception and of experimentation, just as induction and hypothetic inference are; only, the perception and experimentation are concerned with imaginary objects instead of with real ones. The operations of perception and of experimentation are subject to error, and therefore it is only in a Pickwickian sense that mathematical reasoning can be said to be perfectly certain. It is so, only under the condition that no error

---

\* I apply this term because it is essentially like the passage from the concrete "virtuous" to the abstract "virtue," or from the concrete "white" (adjective) to the abstract "whiteness," or "white" (substantive).

creeps into it: yet, after all, it is susceptible of attaining a practical certainty. So, for that matter, is scientific reasoning; but not so readily. Again, mathematics brings to light results as truly occult\* and unexpected as those of chemistry; only they are results dependent upon the action of reason in the depths of our own consciousness, instead of being dependent, like those of chemistry, upon the action of Cosmical Reason, or Law. Or, stating the matter under another aspect, analytical reasoning depends upon associations of similarity, synthetical reasoning upon associations of contiguity. The logic of relatives, which justifies these assertions, shows accordingly that deductive reasoning is really quite different from what it was supposed by Kant to be; and this explains how it is that he and others have taken various mathematical propositions to be synthetical which in their ideal sense, as propositions of pure mathematics, are in truth only analytical.

Descending from things I can demonstrate to things of which various facts, in the light of those demonstrations, fully persuade me, I will say that in my opinion there are many synthetical propositions which, if not *a priori* in Dr. Carus's sense, are, at least, innate (notwithstanding his frequent denials of this, as in ¶ 15) though he is quite right in saying that their abstract and distinct formulation comes very late (¶ 126). But turn the facts as I will, I cannot see that they afford the slightest reason for thinking that such propositions are ever absolutely universal, exact, or necessary in their truth. On the contrary, the principles of probable inference show this to be impossible.

Dr. Carus adduces the instance of a geometrical proposition, namely, "that two congruent regular tetrahedrons, when put together, will form a hexahedron." (¶ 25.) This, he says, seems to be "a very wonderful thing"; for why should not a larger tetrahedron be formed, just as two heaps of flour make a large heap of flour? Yet, he continues, the probability that the two tetrahedrons

---

\* I can never use this word without thinking of the explanation of it given by Petrus Peregrinus in his *Epistole de Magnete*. He says that physical properties are occult in the sense that they are only brought out by experimentation, and are not to be deduced from admixtures of *hot and cold, moist and dry*.



do always make a hexahedron is 1, "which means certainty" (§ 27). But as it happens, the proposition, in the form stated is quite erroneous. What is true is this. If two tetrahedra are so placed that one face of each is coincident with one face of the other, while all the other faces are inclined to one another, and if of the 8 faces, the 2 that are coincident are not counted, there remain to be counted  $8 - 2 = 6$  faces. But there is nothing more wonderful about this than that  $8 - 2 = 6$ , which is an easy corollary from definitions. Very few propositions in mathematics that appear "marvellous" will hold water; and those few excite our astonishment only because the real complexity of the conditions are masked in an intuitional presentation of them.

Dr. Carus holds (§ 15) that formal knowledge is absolutely universal, exact, and necessary. In some cases, as where he says that, given the number of dimensions of space, the entire geometry could be deduced (§ 35), the boasted infallibility will prove on examination to be downright error. In all other cases, the propositions only relate to ideal constructions, and their applicability to the real world is at the best doubtful, and, as I think, false; while in their ideal purity, they are not synthetical.

Thus, my good friend and antagonist holds that the combination of oxygen and hydrogen to produce water is not "different in principle" from that of the tetrahedra to produce a hexahedron (§ 26). There is all the difference between the ideal and the real; which to my Scotistic mind is very important. But this is not the only passage in which he speaks as if form were the principle of individuation.

§ 9. Dr. Carus's position is even weaker than that of Kant, who makes space, for example, a necessary form of thought (in a broad sense of that term). But Dr. Carus appears to consider space as an absolute reality. For he says (§ 119) that "every single point of space has its special and individual qualities." Here again form is made the principle of individuation; whence the queer phrase, "individual qualities."

§ 10. Dr. Carus argues that whatever is unequivocally determinate is necessary. (§ 124.) Were the determination spoken of real



dynamic determination, this would be a mere truism. But the expression used, *eindeutig bestimmt*, merely expresses a mathematical determination, and therefore no real necessity ensues. The equation

$$x^2 - 23x + 132\frac{1}{2} = 0$$

determines  $x$  to be either 11.477 or 11.523. In this sense,  $x$  has necessarily one value or the other. The equation

$$x^2 - 12x + 6 = 0$$

determines  $x$  to be either 11.477 or 0.523. Together, the two equations uniquely determine  $x$  to be 11.477. This shows how much that argument amounts to.

§ 11. By "sameness," Dr. Carus means equivalence for a given purpose. (§§ 102, 106.) By the "idea of sameness," he means (§§ 77, 96) the principle that things having a common character are for some purpose equivalent. This, he says, "has a solid basis in the facts of experience." By a "world of sameness" (§ 113), he seems to mean one in which any two given concrete things are in some respect equivalent. He argues (§ 122) that a "world of sameness is a world in which necessity rules." I do not see this. It seems to me so bald a *non sequitur*, that I cannot but suppose the thought escapes my apprehension. If there were anything in the argument, it would seem to be a marvellously expeditious way of settling the whole dispute; and therefore it would have been worth the trouble of stating, so as to bring it within the purview of minds like mine.

§ 12. My candid opponent sometimes endorses emphatically the Leibnizian principle. "Necessitarianism must be founded on something other than observation. Observation is *a posteriori*; it has reference to single facts, to particulars; yet the doctrine of necessity . . . is of universal application. The doctrine of necessity . . . is of an *a priori* nature." (§ 11.) "Millions of single experiences . . . cannot establish a solid belief in necessity." (§ 14.) "No amount of experience is sufficient to constitute causation by a mere synthesis of sequences." (§ 22.) "Millions of millions of cases" constitute "no proof" that a proposition "is always so." (§ 29.)

Nevertheless, he holds that the law of "the conservation of matter and energy" so conclusively proves necessary causation, that

the obstinacy of Hume, himself, could not have withstood the argument. (§ 23.) One wonders, then, what is supposed to prove this "law of the conservation of matter and energy," if no amount of experience can prove it.

But the *a priori* itself can "be based on the firm ground of experience." (§ 14.) In that case, it is not prior to experience, after all! "The idea of necessity is based upon the conception of sameness, and . . . the existence of sameness is a fact of experience." (§ 87.) If absolute necessity can be irrefragably demonstrated from the fact that two things are alike, it is a pity Dr. Carus should not state this demonstration in a form that I, and men like me, can understand. That would be more to the purpose than merely saying it can be proved. Absolute chance is rejected as "involving a violation of laws well established by *positive evidence*." (§ 149.)

All these *denials* that absolute necessity can be established and absolute chance refuted by experiential evidence, mixed with as clear *assertions* of the same things, when taken together, have the appearance of an attempt, as the politicians say, to "straddle" the question.

§ 13. But the ingenious Doctor seeks to bolster up necessity by introducing the confused notion of "causation."

I do not know where the idea originated that a cause is an instantaneous state of things, perfectly determinative of every subsequent state. It seems to be at the bottom of Kant's discourse on the subject; yet it accords neither with the original conception of a cause, nor with the principles of mechanics. The original idea of an efficient cause is that of an agent, more or less like a man. It is prior to the effect, in the sense of having come into being before the latter; but it is not transformed into the effect. In this sense, it may happen that an event is a cause of a subsequent event; seldom, however, is it the principal cause. Far less are events the only causes. The modern mechanical conception, on the other hand, is that the relative positions of particles determine their accelerations at the instants when they occupy those positions. In other words, if the positions of all the particles are given at *two* instants (together with the law

of force), then the positions at all other instants may be deduced.\* This doctrine conflicts with Kant's second analogy of experience, as interpreted by him, in no less than four essential particulars. In the first place, far from involving any principle that could properly be termed generation, or *Erzeugung*, which is Kant's word for the sequence of effect from cause, the modern mechanical doctrine is a doctrine of persistence, and, as I have repeatedly explained, positively prohibits any real growth. In the second place, one state of things (i. e. one configuration of the system) is not sufficient to determine a second; it is two that determine a third. To whomsoever may think that this is an inconsiderable divergence of opinions, let me say, study the logic of relatives, and you will think so no longer. In the third place, the two determining configurations, according to mechanics, may be taken at almost any two instants, and the determined configuration be taken at any third instant we like. *There is no mechanical truth in saying that the past determines the future, rather than the future the past.* We habitually follow tradition in continuing to use that form of expression, but every mathematician knows that it is nothing but a form of expression. We continue, for convenience, to talk of mechanical phenomena as if they were regulated, in the same manner in which our intentions regulate our actions (which is essentially a determination of the future by the past), although we are quite aware that it is not really so. Remark how Kant reasons :

"If it is a necessary law of our sensibility, and consequently a *formal condition* of all perceptions, that the preceding time determines the following, (since I can only come to the following through the preceding,) then is it also an indispensable *law of the empirical representation* of the time-series that the appearances of the preceding time determine every occurrence in the following."

What this leads to is a causality like that of mental phenomena, where it is the past which determines the future, and *not* (in

---

\* It follows as a corollary from this that if the positions of the particles at any one instant, together with the velocities at that instant, and the law of force, are given, the positions at all instants can be calculated. Of course, to give the positions and velocities at one instant, is a special case of the giving of the positions at two instants. The two instants may be such that there will be more than one solution of the problem; but this is an insignificant detail.

the same sense) the reverse ; but the doctrine of the conservation of energy consists precisely in the denial that anything like this occurs in the domain of physics. Had Kant studied the psychological phenomena more attentively and generalised them more broadly, he would have seen that in the mind causation is not absolute, but follows such a curve as is traced in my essay towards "The Law of Mind" (*The Monist*, Vol. II, 550). Does our judicious editor deem it ungracious to find fault with Kant for not doing so much more than he did, considering what that hero-like achievement was? We must seem to carp, as long as thinkers can hold that achievement for sufficient. In the fourth place, Kant's "Analogy" ignores that continuity which is the life-blood of mathematical thought. He deals with those awkward chunks of phenomenon, called "events." He represents one such "event" as determined by certain others, definitely, while the rest have nothing to do with it. It is impossible to cement such thought as this into hermetic continuity with the refined conceptions of modern dynamics. The statement that every instantaneous state of things determines precisely all subsequent states, and not at all any previous states, could, I rather think, be shown to involve a contradiction.

The notion which Dr. Carus holds of a cause seems to be that it is a state, embracing all the positions and velocities of all the masses at one instant, the effect being a similar state for any subsequent instant. (§§ 21, 24.) This breaks at once with common parlance, with dynamics, and with philosophical logic. In common parlance, we do not say that the position and upward velocity of a missile is the cause of its being at a subsequent instant lower down and moving with a greater downward velocity.\* In dynamics, it is the fixed force, gravitation, or whatever else, together with those relative positions of the bodies that determine the intensity and direction of the forces, that is regarded as the cause. But these causes are not previous to, but simultaneous with, their effects, which are the instantaneous accelerations. Finally, logic opposes our calling

---

\* It would seem to follow from his notion that in uniform motion each minute's motion is the cause of that of the next. Yet he says (§ 19) "there is no cause that is equal to its effect."

one of two states which equally determine one another (as any two states of a system do, if the velocities are taken to be included in these states) *the* determinator, or cause, simply because of the circumstance that it precedes the other in time,—a circumstance that is upon the principles of dynamics plainly insignificant and irrelevant.

Everybody will make slips in the use of words that have been on his lips from before the time when he learned to think ; but the practice which I endeavor to follow in regard to the word *cause*, is to use it in the Aristotelian sense of an *efficient cause*, in all its crudeness. In short, I refuse to use it at all as a philosophical word. When my conception is of a dynamical character, I endeavor to employ the accepted terminology of dynamics ;\* and when my idea is a more general and logical one, I prefer to speak of the *explanation*.

§ 14. Dr. Carus thinks the element of necessity in causation can be demonstrated by considering the process as a transformation. "It is a sequence of two states which belong together as an initial and final aspect of one and the same event." (§ 21. Compare §§ 20, 24.) He neglects to explain how he brings under this formula the inward causation of the will and character, as set forth by him in §§ 163-167.

It is unnecessary for me to reply, at length, to an argument so manifestly inconclusive. On the one hand, it conflicts with the principle that absolute necessity cannot be proved from experience ; and on the other hand, it leaves room for an imperfect necessity.

Professor Tait has done an ill office to thought in countenancing the idea that the conservation of energy is of the same nature as the "conservation," or rather perduration, of matter. Dr. Carus says (§ 121) that

"The law of the conservation of matter and energy rests upon the experience (corroborated by experiments) that causation is transformation. It states that the total amount of matter and the total amount of energy remain constant. There is no creation out of nothing and no conversion of something into nothing."

---

\* But, as I have elsewhere said, I should like to persuade mathematicians to speak of "positional energy" as *Kinetic potency*, the *vis viva* as *Kinetic energy*, and the total "energy" as the *Kinetic entelechy*.



The historical part of this statement contains only a small grain of truth; but that I will not stop to criticise. The point I wish to make is that the law of the conservation of energy is here represented under a false aspect. The true substance of the law is that the accelerations, or rates of change, of the motions of the particles at any instant depend solely on their relative positions at those instants. The equation which expresses the law under this form is a differential equation of the second order; that is, it involves the rates of change of the rates of change of positions, together with the positions themselves. Now, because of the purely analytic proposition of the differential calculus that

$$D_t^2 s = \frac{1}{2} D_s (D_t s)^2,$$

the first integral of the differential equation of the second order, that is, the differential equation of the first order which expresses the same state of things, equates half the sum of the masses, each multiplied by the square of its velocity, to a function of the relative positions of the particles *plus* an arbitrary constant.\* In order to fix our ideas, let us take a very simple example, that of a single particle accelerated towards an infinite plane, at a rate proportional to the  $n^{\text{th}}$  power of its distance from the plane. In this case, if  $s$  be the distance, the second differential equation will be

$$D_t^2 s = -a s^n,$$

and the first integral of it will be

$$(D_t s)^2 = -\frac{2a}{n+1} s^{n+1} + C.$$

By the first law of motion, and the Pythagorean proposition, the part of the velocity-square depending on the horizontal component is also constant.

The arbitrary constant,  $C$ , plainly has its genesis in the fact that forces do not determine velocities, but only accelerations. Its value will be fixed as soon as the velocity at any instant is known. This quantity would exist, just the same, and be independent of the time, and would therefore be "conserved" whether the forces were

---

\* The differential equation being an ordinary, not a partial one, this is an absolute constant, determined by initial (or final, or any instantaneous) conditions.



"conservative," that is, simply positional, or not. Now, this constant is the energy; or rather, the energy is composed of this constant increased by another which is absolutely indeterminable, being merely supposed large enough to make the sum positive.

Thus, the law of energy does not prescribe that the total amount of energy shall remain constant; for this would be so in any case by virtue of the second law of motion; but what it prescribes is that the total energy diminished by the living force shall give a remainder which depends upon the relative positions of the particles and not upon the time or the velocities. It is also to be noticed that the energy has no particular magnitude, or quantity. Furthermore, in transformations of kinetical energy into positional energy, and the reverse, the different portions of energy do not retain their identity, any more than, in book-keeping, the identity of the amounts of different items is preserved. In short, the conservation of energy, (I do not mean the *law* of conservation,) is a mere result of algebra. Very different is it with the "conservation" of matter. For, in the first place, the total mass is a perfectly definite quantity; and, in the second place, in all its transformations, not only is the *total* amount constant, but all the different parts preserve their identity. To speak, therefore, of "the conservation of matter and energy," is to assimilate facts of essentially contrary natures; and to say that the law of the conservation of energy makes the total amount of energy constant is to attribute to this law a phenomenon really due to another law, and to overlook what this law really does determine, namely, *that the total energy less the kinetic energy gives a remainder which is exclusively positional.*

§ 15. Dr. Carus does not make it clear what he means by *chance*. He does, indeed, say (§§ 145, 146):

"What is chance?"

"Chance is any event not especially intended, either not calculated, or, with a given and limited stock of knowledge, incalculable."

This defines what he means by a chance event, in the concrete; what he understands by probability, we are left to conjecture. But from what he says in § 147, I infer that he regards it as dependent upon the state of our ignorance, and therefore nothing real.

I am, therefore, much puzzled when I find him expressing a conviction (§§ 88, 156) that chance plays an important part in the real world. He explains very distinctly that "when we call a throw of the dice pure chance, we mean that the incidents which condition the turning up of these or those special faces of the dice have not been, or cannot be, calculated." (§ 147.) This is the commonest, because the shallowest, philosophy of chance. Even Venn might teach him better than that. However, according to that view, when he writes of "the important part that chance plays in the world,—not absolute chance . . . but that same chance of which the throw of the die is a typical instance" (§ 88), he can be understood to mean no more than that many things happen which we are not in condition to calculate or predict. This is not playing a part *in the world*, one would say—at least, not in the natural world; it is only playing a part in our ignorance.

Dr. Carus frequently uses phrases which make us suspect he penetrates deeper. Thus, he says, "we do not believe in absolute chance, but we believe in chance" (§ 144); and again, "Every man is the architect of his own fortune—but not entirely. There are sometimes coincidences determining the fates of men." (§ 161.) But when we remark the consecution of §§ 137–162, we feel pretty sure he really sees no further. To do so would have been to perceive that indefinitely varied specificfalsness *is* chance.

For a long time, I myself strove to make chance that diversity in the universe which laws leave room for, instead of a violation of law, or lawlessness. That was truly believing in chance that was not absolute chance. It was recognising that chance does play a part in the real world, apart from what we may know or be ignorant of. But it was a transitional belief which I have passed through, while Dr. Carus seems not to have reached it.

As for absolute chance, Dr. Carus makes the momentous admission that it is "not unimaginable" (§ 150). If so, its negation, or absolute necessity, cannot be a formal principle.

§ 16. But it is time for me to leave the consideration of Dr. Carus's system and to take up his strictures upon mine. His philosophy is one eminently enlightened by modern ideas, which it

synthesises to an unusual extent. It is distinguished for its freedom from the vice of one-sidedness, and displays every facet of the gem of philosophical inquiry, except the one on which it rests, the question of absolute law. Its prominent faults, which I feel sure must have struck every competent reader, are that it shows little trace of meditation upon the thoughts of the great idealists, and that there is a certain want of congruity between different elements of it. How strangely it sounds, for instance, to find an apriorian, and one who is dinging "formal laws" so perpetually into our ears, one who holds that "in order to weave the woof of the *a posteriori* elements into coherent cloth, we want the warp of the *a priori*" (§ 15), to find this man declaring for a positivism "which accepts no doctrine, theory, or law, unless it be a formulation of facts," and proclaiming that "the whole business of science is to systematise the samenesses of experience, and to present them in convenient formulas" (§ 120). Now there is just one way of bringing such warring elements into harmony, and curing the greatest defect of the system,—and it is a way which would also bring the whole into far better concordance with natural science. It is to lop off the heads of all absolute propositions whose subject is not the Absolute, and reduce them to the level of probable and approximate statements. Were that defalcation performed, Dr. Carus's philosophy would, in its general features, offer no violent opposition to my opinions. Moreover, the Doctor has at heart the conciliation of religion and science. I confess such serious concern makes me smile; for I think the atonement he desires is a thing which will come to pass of itself when time is ripe, and that our efforts to hasten it have just that slight effect that our efforts to hasten the ripening of apples on a tree may have. Besides, natural ripening is the best. Let science and religion each have stout faith in itself, and refuse to compromise with alien and secondary purposes, but push the development of its own thought on its own line; and then, when reconciliation comes,—as come it surely will,—it will have a positive value, and be an unmingled good. But since our accomplished editor thinks himself called upon to assist in this birth of time, let me ask him whether of all the conditions of such peace, the first is not that religious thought should abandon

that extravagant absoluteness of assertion which is proper to the state of intellectual infancy, but which it has so long been too timid to let go? This pragmatism and unneeded absoluteness it is which is most deeply contrary to the method, the results, and the whole spirit of science; and no error can be greater than to fancy that science, or scientific men, rest upon it or readily tolerate it.

§ 17. Dr. Carus (§§ 56-64) condemns my method of investigation as contrary to that by which science has been advanced; and holds that a radically different, and thoroughly positivistic method is requisite,—a method so intensely positivistic as to exclude all originality. I suppose he will not object to my forming an opinion concerning the methods of science. I was brought up in an atmosphere of scientific inquiry, and have all my life chiefly lived among scientific men. For the last thirty years, the study which has constantly been before my mind has been upon the nature, strength, and history of methods of scientific thought. I have no space here to argue the question. In its logical aspect, I have partly considered it in various publications; and in its historical aspect, I have long been engaged upon a treatise about it. My critic says (§ 57) that I am “very positivistic in my logic of science.” This is a singular misapprehension. Few of the great scientific minds with whom I have come into personal contact, and from whom I endeavored to learn were disposed to condemn originality or the ideal part of the mind’s work in investigation; and those few, it was easy to see, really breathed an atmosphere of ideas which were so incessantly present that they were unconscious of them. Were I to name those of my teachers who were most positivistic in theory, a smile would be excited. My own historical studies, which have been somewhat minutely critical, have, on the whole confirmed the views of Whewell, the only man of philosophical power conjoined with scientific training who had made a comprehensive survey of the whole course of science, that progress in science depends upon the observation of the right facts by minds *furnished with appropriate ideas*. Finally, my long investigation of the logical process of scientific reasoning led me many years ago to the conclusion that science is nothing but a development of our natural instincts. So much for my *theory* of

scientific logic. It is as totally opposed as anything can be to Dr. Carus's theory (§ 69, note; and "Ursache, Grund und Zweck," p. 2) that originality is out of place in science.

But in my *practice* of scientific reasoning, Dr. Carus accuses me of being what he calls a "constructionist"; that is, a theoriser unguided by indications from observation or accepted facts. To a mind upon whom that celebrated and splendid chapter of Kant upon the architectonical method failed to make a deep impression, I may appear so; but *travesty* is in truth hardly too strong a word to describe the account of my method by Dr. Carus.

Perhaps exaggeration is not without its value. If so, let me sum up the method Dr. Carus recommends. Eschew originality, is its pious formula; do not think for yourself, nor countenance results obtained by original minds. Distrust them; they are not safe men. Leave originality to mathematicians and their breed, to poets, and to all those who seek the sad notoriety of having unsettled belief.\* Flee all philosophies which smack of this aberrant nineteenth century.† This theory of Dr. Carus condemns itself; for it is highly original, and soars into the free ether untrammelled by historic facts.

Keppler comes very close to realising my ideal of the scientific method; and he is one of the few thinkers who have taken their readers fully into their confidence as to what their method really has been.‡ I should not feel justified in inflicting upon mine an autobiographical account of my own course of thought; but some things Dr. Carus's accusation forces me to mention. My method of attacking all problems has ever been to begin with an historical and rational inquiry into the special method adapted to the special problem. This is the essence of my architectonical proceeding upon which Dr. Carus has commented very severely. To look an inch before one's nose involves originality: therefore, it is wrong to have a conscious method. But further, in regard to philosophy, not only

---

\* Dr. Carus calls attention to the connection between my doctrine of the fixation of opinion and his anti-originalism.

† Dr. Carus passes a sweeping judgment on Post-Kantian philosophy, as being original.

‡ This was a remark of my father's.



the methods, but the elementary ideas which are to enter into those methods, should be subjected to careful preliminary examination. This, especially, Dr. Carus finds very unscientific. (§ 64, and elsewhere.) It is, undoubtedly, the most characteristic feature of my procedure. Certainly it was not a notion hastily or irreflectively caught up; but is the maturest fruit of a lifetime of reflection upon the methods of science, including those of philosophy; and if it shall be found that one contribution to thought on my part has proved of permanent service, that, I expect, will be the one. This method in no wise teaches that the method and materials for thought are not to be modified in the course of the study of the subject-matter. But instead of taking ideas at haphazard, or being satisfied with those that have been handed down from the good old times, as a mind keenly alive to the dangers of originality would have done, I have undertaken to make a systematic survey of human knowledge (a very slight sketch of which composed the substance of my paper on the "Architecture of Theories," in order to find what ideas have, as a fact, proved most fruitful, and to observe the special utilities they have severally fulfilled. A subsidiary object of this survey was to note what the great obstacles are to-day in the way of the further advance of the different branches of science. In my "Architecture of Theories," I never professed to do more than make a slight sketch of a small portion of my preliminary studies, devoting thirteen lines to some hints as to the nature of the results. In the four following papers I have given a selection of a few of these results. Among those which remain to be reported are some of much more immediate importance than any of those hitherto set forth.\* If anybody has been surprised to find my subsequent papers developing thoughts, which they were unable to foresee from my first, it is only what I warned people from the outset that they would find to happen. Nor have the greatest of these surprises yet been reached.\*

The next series of facts reviewed was that of the history of philosophy. I waded right into this fearful slough of "originality," in

---

\* A person in the last *Monist*, breaks in upon my series of articles to foretell what the "issues of synechism" will be. Were he able to do so, it would certainly be the height of ill-manners thus to take the words out of my mouth.



order to gather what seemed to throw a light upon the subject. Finally, I reviewed the general facts of the universe.

I now found myself forced by a great many different indications to the conclusion that an evolutionary philosophy of some kind must be accepted,—including among such philosophies systems like those of Aristotle and of Hegel. From this point the reasoning was more rapid. Evolution had been a prominent study for half a generation; and much light had been thrown upon the conditions for a fruitful evolutionary philosophy. The first question was, how far shall this evolution go back? What shall we suppose *not* to be a product of growth? I fancy it is this cautious reflectiveness of my procedure which especially displeases Dr. Carus. It is not positivistic: it is architectonic. But the answer to the question was not far to seek. If an evolutionary explanation is to be adopted, philosophy, logic, and the economy of research all dictate that in the first essay, at least, that style of explanation be carried as far back as explanation is called for. What elements of the universe require no explanation? This was a simple question, capable of being decided by logic with as much facility and certainty as a suitable problem is solved by differential calculus. Being, and the uniformity in which being consists, require to be explained. The only thing that does not require it is non-existent spontaneity. This was soon seen to mean absolute chance. The conclusion so reached was clinched by a careful reëxamination of the office of chance in science generally, and especially in the doctrines of evolution. Arrived at this point, the next question was, what is the principle by which the development is to proceed? It was a difficult inquiry, and involved researches from different points of view.

But I will not trouble the reader with further autobiographical details. I have given enough to show that my method has neither been in theory purely empirical, nor in practice mere brain-spinning; and that, in short, my friend Dr. Carus's account of it has been as incorrect as can be.

§ 18. The learned doctor (§§ 6, 7, 8) pronounces me to be an imitator of David Hume, or, at least, classes my opinions as closely allied to his. Yet be it known that never, during the thirty years in

which I have been writing on philosophical questions, have I failed in my allegiance to realistic opinions and to certain Scotistic ideas; while all that Hume has to say is said at the instance and in the interest of the extremest nominalism. Moreover, instead of being a purely negative critic, like Hume, seeking to annul a fundamental conception generally admitted, I am a positive critic, pleading for the admission to a place in our scheme of the universe for an idea generally rejected. In the first paper of this series, in which I gave a preliminary sketch of such of my ideas as could be so presented, I carefully recorded my opposition to all philosophies which deny the reality of the Absolute, and asserted that "the one intelligible theory of the universe is that of objective idealism, that matter is effete mind." This is as much as to say that I am a Schellingian, of some stripe; so that, on the whole, I do not think Dr. Carus has made a very happy hit in likening me to Hume, to whose whole method and style of philosophising I have always been perhaps too intensely averse. Yet, notwithstanding my present disclaimer, I have little doubt apriorians will continue to describe me as belonging to the sceptical school. They have their wonderful ways of arriving at truth, without stooping to confront their conclusions with facts; and it is amusing to see how sincerely they are convinced that nobody can have science at heart, without denying all they uphold.\*

My opponent has a habit of throwing out surprising opinions without the least attempt to illuminate them with the effulgence of reason. Thus he says (§ 8): "If Kant's answer to Hume had been satisfactory, Mr. Peirce would probably not have renewed the attack." What attack? All that Hume attacked I defend, namely, law as a reality. How could a defence of that which I defend as essen-

---

\* As I am writing, I am shown a letter, in which the writer says: "Peirce with all his materialistic ideas, yet," etc. I never promulgated a materialistic idea in my life. The writer simply assumes that science is materialistic. As I am correcting the proofs, I notice that Mr. B. C. Burt, in his new *History of Modern Philosophy*, sets me down as sceptical, though doubtfully. There are a good many inaccuracies in the work. This was inevitable in a first edition. But the ingenious plan of the book admirably adapts it to the wants of just that class of students who cannot understand that no repertory of facts ever can be trusted implicitly.

tial to my position, cause me to surrender that position, namely, that real regularity is imperfect? In any sense in which Hume could have admitted the possibility of law, it must be precisely followed; since its existence could consist only in the conformity of facts unto it. But perhaps Dr. Carus means that if one question had been completely settled, I should probably have confined myself to talking about that, instead of broaching a new one.

§ 19. Another misunderstanding of my position on the part of Dr. Carus (§§ 12, 13) is simply due to "boldly" having been twice printed where the reading should have been "baldly," in my paper on "The Doctrine of Necessity." (*The Monist*, Vol. II, p. 336, lines 20 and 25.) I wish printers would learn that I never use the word *bold*. I have so little of the quality, that I don't know what it means. As I read the "revise," as usual, it was presumably my fault that the *erratum* occurred. At any rate, had my meaning been clearly expressed, the proof-reader would not have been misled by my defective chirography. What I was trying to say was, in substance, this: Absolute chance is a hypothesis; and, like every hypothesis, can only be defended as explaining certain phenomena.\* Yet to suppose that an event is brought about by absolute chance is utterly illogical, since as a hypothesis it could only be admitted on the ground of its explaining observed facts; now from mere non-law nothing necessarily follows, and therefore nothing can be explained; for to explain a fact is to show that it is a necessary, or, at least, a probable, result from another fact, known or supposed. Why is not this a complete refutation of the theory of absolute chance? *Answer*: because the *existence* of absolute chance, as well as many of its characters, are not themselves absolute chances, or sporadic events, unsubject to general law. On the contrary, these things *are* general laws. Everybody is familiar with the fact that chance has laws, and that statistical results follow therefrom. Very well: I do not propose to explain anything as due to the action of

---

\* Its being hypothetical will not prevent its being established with a very high degree of certainty. Thus, all history is of the nature of hypothesis; since its facts cannot be directly observed, but are only supposed to be true to account for the characters of the monuments and other documents.

chance, that is, as being lawless. I do not countenance the idea that Bible stories, for instance, show that nature's laws were violated;—though they may help to show that nature's laws are not so mechanical as we are accustomed to think. But I only propose to explain the regularities of nature as consequences of the only uniformity, or general fact, there was in the chaos, namely, the general absence of any determinate law.\* In fact, after the first step is taken, I only use *chance* to give room for the development of law by means of the law of habits.

§ 20. In ¶ 28, I read: "Mr. Peirce does not object to necessity in certain cases; he objects to necessity being a universal feature of the world." This is correctly stated, and so it is in ¶ 203. I object to necessity being universal, as well as to its ever being exact. In short, I object to absolute universality, absolute exactitude, absolute necessity, being attributed to any proposition that does not deal with the *A* and the *Ω*, in the which I do not include any object of ordinary knowledge. But it is careless to write (¶ 193) that I "describe the domain of mind as the absence of law." Is not one of my papers entitled "The Law of Mind"? It is true that I make the law of mind essentially different in its mode of action from the law of mechanics, inasmuch as it requires its own violation; but it is law, not chance uncontrolled. That it is not "an undetermined and indeterminable sporting" should have been obvious from my expressly stating that its ultimate result must be the entire elimination of chance from the universe. That directly negatives the adjective "indeterminable," and hence also the adjective "undetermined." Still more unwarranted is the statement (¶ 205) that I deny "that there are samenesses in this world." If the slightest excuse for such an accusation can be found in all my writings I shall be mightily surprised.

§ 21. Dr. Carus fully admits (¶ 9) the justice of my first reply to the argument that necessity is postulated in all scientific reasoning, which reply is that to postulate necessity does not make it true.

---

\* Somebody may notice that I here admit a proposition as absolutely true. Undoubtedly; because it relates to the Absolute.

As this reply, if correct is complete, Dr. Carus was bound after that admission to drop the postulate-argument in favor of necessity.\* But he takes no notice, at all, of my four-page argument to show that scientific reasoning does *not* postulate absolute universality, exactitude, or necessity (*The Monist*, Vol. II, pp. 324-327); but calmly asserts, four or five times over (§§ 5, 11, 16, 62, 79), without one scintilla of argumentation, that that postulate *is* made, and uses this as an argument in favor of necessity.

§ 22. He also fully admits (§§ 11, 14, 22) the justice of my argument that the absoluteness of universality, exactitude, and necessity, cannot be proved, nor rendered probable, by arguments from observation. That argument consisted in assuming that all arguments from observation are probable arguments, and in showing that probable inferences are always affected with probable errors.

Had I deemed it requisite, I might easily have fortified that argument by a more profound analysis of scientific reasoning. Such an analysis I had formerly given in my "Theory of Probable Inference" (in "Studies in Logic," Boston: Little and Brown).

But, notwithstanding his admissions, Dr. Carus sets up his *ipse dixit* against my argumentation. "We deny most positively," says the editorial Elohim, "that the calculus of probabilities is applicable to the order of the world, as to whether it may or may not be universal." (§§ 27, 31.)

To support this, he cites (§§ 31-34) four passages from articles written by me sixteen years ago. I hope my mind has not been stationary during all these years; yet there is little in those old articles which I now think positively erroneous, and nothing in the passages cited. My present views had, at that time, already begun to urge themselves on my mind; but they were not ripe for public avowal. In the first of the passages cited, I express the opinion, which I first uttered in my earlier lectures before the Lowell Institute, in 1866, afterwards in the *Popular Science Monthly* in 1877, in

---

\* Indeed, to admit that reply is all but to admit the non-absolute grade of necessity.

still fuller elaboration in my "Theory of Probable Inference" in 1882, and maintain now as strongly as ever, that no definite probability can be assigned to any general arrangement of nature. To speak of an *antecedent* probability would imply that there was a statistical science of different universes; and a *deduced* probability requires an antecedent probability for one of its data.\* This consideration only goes to fortify my present position, that we cannot conclude from observed facts with any degree of probability, and therefore *a fortiori* not with certainty, that any proposition is absolutely universal, exact, or necessary. In the absence of any weight of probability in favor of any particular exact statement, the formal presumption is altogether against any one out of innumerable possible statements of that kind.

The second passage cited is one in which I argue that the universe is not a chaos, or chance-medley. Now Dr. Carus admits (§ 28) that I do not to-day maintain that it is a chance-medley.

The third passage cited is this: "A contradiction is involved in the very idea of a chance-world." This is in entire harmony with my present position that "a chaos . . . being without connection or regularity would properly be without existence." ("Architecture of Theories," *The Monist*, Vol. I, p. 176.)

The fourth passage is to the effect that "the interest which the uniformities of nature have for an animal measures his place in the scale of intelligence." This I still believe.

So much for my supposed contradictions. If I am not mistaken, our amiable editor, whose admirable editorship springs so largely out of his amiability, in copying out these passages was really not half so much intent on showing me to be wrong at present, as on showing me to have been right formerly. However hard he hits, he contrives to honey his sockdologers, and sincerely cares more to make the reader admire his antagonist when he is right than to condemn him when he is wrong. There is a touch of art in this that proclaims the born editor, and which I can hardly hope to imitate.

---

\* I rightly go somewhat further in my *Theory of Probable Inference*; but that has no bearing on the present discussion.



Though Dr. Carus admits over and over again that necessity cannot be based on observation, he often slips back to the idea that it can be so based. He says, (§ 30) that "form is a quality of this world, not of some samples of it, but throughout, so far as we know of existence in even the most superficial way." But does he not see that all we *do* know, and all we *shall* to-morrow, or at any date know, is nothing but a sample of our possible experience,—nay, is but a sample of what we are in the future to have already experienced? I have characterised inductive inference as reasoning from samples; but the most usual way of sampling a class is by examining *all* the instances of it that have come under our observation, or which we can at once collect.

§ 23. Dr. Carus (§§ 44, 46) holds that from my social theory of reality, namely, that the real is the idea in which the community ultimately settles down, the existence of something inevitable is to be inferred. I confess I never anticipated that anybody would urge that. I thought just the reverse might be objected, namely, that all absoluteness was removed from reality by that theory; and it was many years ago that, in my "Theory of Probable Inference," I admitted the obvious justice, as it seemed to me, of that objection. We cannot be quite sure that the community ever will settle down to an unalterable conclusion upon any given question. Even if they do so for the most part, we have no reason to think the unanimity will be quite complete, nor can we rationally presume any overwhelming *consensus* of opinion will be reached upon every question. All that we are entitled to assume is in the form of a *hope* that such conclusion may be substantially reached concerning the particular questions with which our inquiries are busied.

Such, at least, are the results to which the consideration of the doctrine of probability brings my mind irresistibly. So that, the social theory of reality, far from being incompatible with tychism, inevitably leads up to that form of philosophy. Socialistic, or as I prefer to term it, agapastic ontology seems to me likely to find favor with many minds at an early day, because it is a natural path by which the nominalist may be led into the realistic ways of thought, ways toward which many facts and inward forces impel him. It is

well, therefore, to call attention to the circumstances that the realism to which it leads is a doctrine which declares general truths to be real,—independent of the opinions of any particular collection of minds,—but not to be destined, in a strictly universal, exact, and sure acceptance, to be so settled, and established. Now to assert that general truths are objectively real, but to deny that they are strictly universal, exact, and certain, is to embrace the doctrine of absolute chance. Thus it is that the agapastic ontologist who endeavors to escape tychism will find himself “led into” that “inextricable confusion” which Dr. Carus (§ 4) has taken a contract to show that I am led into.

§ 24. Conservatism is wholesome and necessary; the most convinced radical must admit the wisdom of it, in the abstract; and a conservative will be in no haste to espouse the doctrine of absolute chance. I, myself, pondered over it for long years before doing so. But I am persuaded, at length, that mankind will before very long take up with it; and I do not believe philosophers will be found tagging on to the tail of the general procession.

My little dialogue between the tychist and the necessitarian (*The Monist*, Vol. II, pp. 331–333) seems to have represented pretty fairly the views of the latter; for Dr. Carus, in §§ 151–155, does little more than reiterate them, without much, if at all, reinforcing them. His §§ 158–160 merely work out, in a form perhaps not quite clear, what is manifest from the elementary principles of dynamics, and was considered in my dialogue.

His arguments in this connection, apart from those already noticed, are that absolute chance is something which if it existed would require explanation, that the manifold specificallness of nature is explained by law without any aid from chance, and that absolute chance if it existed, in the sense in which it is supposed to exist in my chaos, could not possibly breed law as supposed by me. To the consideration of these arguments I proceed to apply myself.

§ 25. One of the architectonic—and, therefore, I suppose, by Dr. Carus considered as highly reprehensible—features of my theory, is that, instead of saying off-hand what elements strike me as requiring explanation and what as not doing so, which seems to be his

way, I have devoted a long time to the study of the whole logical doctrine of explanation, and of the history of explanations, and have based upon the general principles so ascertained my conclusions as to what things do and what do not require to be explained.

Dr. Carus (§ 67) defines *explanation* as a description of a special process of nature in such a way that the process is recognised as a transformation. This I cannot quite grant. First, I cannot admit that "special processes of nature" are the only things to be explained. For instance, if I were to meet a gentleman who seemed to conform scrupulously to all the usages of good society, except that he wore to an evening party an emerald satin vest, that would be a fact calling for explanation, although it would not be a "special process of nature." Second, I cannot admit that an explanation is a description of the fact explained. It is true that in the setting forth of some explanations, it is convenient to restate the fact explained, so as to set it under another aspect; but even in these cases, the statement of *other* facts is essential. In all cases, it is *other facts*, usually hypothetical, which constitute the explanation; and the process of explaining is a process by which from those other facts the fact to be explained is shown to follow as a consequence, by virtue of a general principle, or otherwise. Thus, a "special process of nature" calling for explanation is the circumstance that the planet Mars, while moving in a general way from west to east among the fixed stars, yet retrogrades a part of the time, so as to describe loops in the heavens. The explanation is that Mars revolves in one approximate circle and we in another. Again, it has been stated that a warm spring in Europe is usually followed by a cool autumn, and the explanation has been offered that so many more icebergs than usual are liberated during a warm spring, that they subsequently lower sensibly the temperature of Europe. I care little whether the fact and the explanation are correct or no. The case illustrates, at any rate, my point that an explanation is a special fact, supposed or known, from which the fact to be explained follows as a consequence. Third, I cannot admit that every description which recognises the fact described as a transformation is an explanation; far less that "it is complete and exhaustive" (§ 67).

A magician transforms a watch into a dove. Recognise it as a transformation and the trick is explained, is it? This is delightfully facile. Describe the change from a caterpillar to a butterfly as a transformation, and does that explain it? Fourth, I cannot admit that every explanation recognises the fact explained as a transformation. The explanation of the loops in the motion of Mars is not of that nature. But I willingly recognise in Dr. Carus's definition an attempt,—more or less successful,—to formulate one of the great offices of scientific inquiry, that of bridging over the gap between the familiar and the unfamiliar.

*Explanation*, however, properly speaking, is the replacement of a complex predicate, or one which seems improbable or extraordinary, by a simple predicate from which the complex predicate follows on known principles. In like manner, a *reason*, in one sense, is the replacement of a multiple subject of an observational proposition by a general subject, which by the very conditions of the special experience is predicable of the multiple subject.\* Such a reason may be called an explanation in a loose sense.

Accordingly, that which alone requires an explanation is a coincidence.

Hence, I say that a uniformity, or law, is *par excellence*, the thing that requires explanation. And Dr. Carus (§ 51) admits that this "is perfectly true."

But I cannot imagine anything further from the truth than his statement (§ 66) that "the only thing in the world of which we cannot and need not give account is the existence of facts itself." I should say, on the contrary, that the existence of facts is the only thing of which we need give account. Forms may indulge in whatever eccentricities they please in the world of dreams, without responsibility; but when they attempt that kind of thing in the world of real existence, they must expect to have their conduct inquired into. But should Dr. Carus reply that I mistake his meaning, that it is only "being in general" (§ 66) that he holds unaccountable, I

---

\* Dr. Carus, in his *Ursache, Grund und Zweck*, well says that *reasons* are discovered by induction, in the strict sense. It is often admitted that *causes* can only be inferred by hypothetic reasoning.

reply that this is simply expressing scepticism as to the possibility and need of philosophy. In a certain sense, my theory of reality, namely that reality is the dynamical reaction of certain forms upon the mind of the community, is a proposed explanation of being in general; and be it remarked that the mind of the community, itself, is the thing the nature of whose being this explanation first of all puts upon an idealistic footing.

Chance, according to me, or irregularity,—that is, the absence of any coincidence,—calls for no explanation. If *law* calls for a particular explanation, as Dr. Carus admits it does, surely the mere absence of law calls for no further explanation than is afforded by the mere absence of any particular circumstance necessitating the result. An explanation is the conception of a fact as a necessary result, thereby accounting for the coincidence it presents. It would be highly absurd to say that the absence of any definite character, must be accounted for, as if it were a peculiar phenomenon, simply because the imperfection of language leads us so to talk of it. Quite unfounded, therefore, is Dr. Carus's opinion that "chance needs exactly as much explanation as anything else" (§ 53);—an opinion which, so far as I can see, rests on no defensible principle.

Equally hasty is his oft repeated objection (§§ 55, 58, 61) that my absolute chance is something ultimate and inexplicable. I go back to a chaos so irregular that in strictness the word existence is not applicable to its merely germinal state of being; and here I reach a region in which the objection to ultimate causes loses its force. But I do not stop there. Even this nothingness, though it antecedes the infinitely distant absolute beginning of time, is traced back to a nothingness more rudimentary still, in which there is no variety, but only an indefinite specificability, which is nothing but a tendency to the diversification of the nothing, while leaving it as nothing as it was before. What objectionable ultimacy is here? The objection to an ultimate consists in its raising a barrier across the path of inquiry, in its specifying a phenomenon at which questions must stop, contrary to the postulate, or hope, of logic. But what question to which any meaning can be attached am I forbidding by my absolute chance? If what is demanded is a theological backing,



or rational antecedent, to the chaos, that my theory fully supplies. The chaos is a state of intensest feeling, although, memory and habit being totally absent, it is sheer nothing still. Feeling has existence only so far as it is welded into feeling. Now the welding of this feeling to the great whole of feeling is accomplished only by the reflection of a later date. In itself, therefore, it is nothing ; but in its relation to the end, it is everything.

More unreasonable yet is Dr. Carus's pretension, that the manifold specificficalness, which is what I mean by chance, is capable of explanation (§§ 142, 143) by his own philosophic method. He may explain one particularity by another, of course ; but to explain specificficalness itself, would be to show that a specific predicate is a necessary consequence of a generic one, or that a whole is without ambiguity a part of its part. Remark, reader, at this point, that chance, whether it be absolute or not, is not the mere creature of our ignorance. It is that diversity and variety of things and events which law does not prevent. Such is that real chance upon which the kinetical theory of gases, and the doctrines of political economy, depend. To say that it is not absolute is to say that it,—this diversity, this specificficalness,—can be explained as a consequence of law. But this, as we have seen, is logically absurd.

Dr. Carus admits that absolute chance is "not unimaginable" (§ 150). Chance itself pours in at every avenue of sense : it is of all things the most obtrusive. That it is absolute, is the most manifest of all intellectual perceptions. That it is a being, living and conscious, is what all the dullness that belongs to ratiocination's self can scarce muster hardihood to deny.

Almost as unthinking is the objection (§ 61) that absolute chance could never beget order. I have noticed elsewhere the historic oblivescence of this objection. Must I once again repeat that the tendency to take habits, being itself a habit, has *eo ipso* a tendency to grow ; so that only a slightest germ is needed ? A realist, such as I am, can find no difficulty in the production of that first infinitesimal germ of habit-taking by chance, provided he thinks chance could act at all. This seems, at first blush, to be explaining something as a chance-result. But exact analysis will show it is not so.



In like manner, when the eminent thinker who does me the honor to notice my speculation, objects that I do not, after all, escape making law absolute, since the tendency to take habits which I propose to make universal is itself a law, I confess I can find only words without ideas in the objection. Law is a word found convenient, I grant, in describing that tendency; but is there no difference between a law the essence of which is to be inviolable (which is the nominalistic conception of mechanical law, whose being, they say, lies in its action) and that mental law the violation of which is so included in its essence that unless it were violated it would cease to exist? In my essay, "The Law of Mind," I have so described that law. In so describing it, I make it a law, but not an absolute law; and thus I clearly escape the contradiction attributed to me.

§ 26. In my attack on "The Doctrine of Necessity," I offered four positive arguments for believing in real chance. They were as follows:

1. The general prevalence of growth, which seems to be opposed to the conservation of energy.
2. The variety of the universe, which is chance, and is manifestly inexplicable.
3. Law, which requires to be explained, and like everything which is to be explained must be explained by something else, that is, by non-law or real chance.
4. Feeling, for which room cannot be found if the conservation of energy is maintained.

In a brief conversation I had with him, my friend remarked (and if it was an inconsiderate concession, I certainly do not wish to hold him to it) that while the theory of tychism had some attractive features, its weakness consisted in the absence of any positive reasons in its favor. I infer from this that I did not properly state the above four arguments. I therefore desire once more to call attention to them, especially in their relations to one another.

Mathematicians are familiar with the theorem that if a system of particles is subject only to positional forces, it is such that if at any instant the velocities were all suddenly reversed, without being altered in quantity, the whole previous history of the system would

be repeated in inverse succession. Hence, when physicists find themselves confronted with a phenomenon which takes place only in one order of succession and never in the reverse order,—of which no better illustration could be found than the phenomena of growth, for nobody ever heard of an animal growing back into an egg,—they always take refuge in the laws of probability as preventive of the velocities ever getting so reversed. To understand my argument number 1, it is necessary to make this method of escape from apparent violations of the law of energy quite familiar to oneself. For example, according to the law of energy, it seems to follow (and by the aid of the accepted theory of light it does follow) that if a prism, or a grating, disperses white light into a spectrum, then the colors of the spectrum falling upon the prism or grating at the same angles, and in the same proportions, will be recombined into white light; and, everybody knows that this does in fact happen. Nevertheless, the usual and prevalent effect of prisms and gratings is to produce colored spectra. Why? Evidently, because, by the principles of probability, it will rarely happen that colored lights converging from different directions will fall at just the right angles and in just the right proportions to be recombined into white light. So, when physicists meet with the phenomena of frictional and viscous resistance to a body in motion, although, according to their doctrine, if the molecules were to move with the same velocities in opposite directions the moving body would be accelerated, yet they say that the laws of probability, applied to the trillions of molecules concerned, render this practically certain not to occur. I do no more, then, than follow the usual method of the physicists, in calling in chance to explain the apparent violation of the law of energy which is presented by the phenomena of growth: only instead of chance as they understand it, I call in absolute chance. For many months, I endeavored to satisfy the data of the case with ordinary *quasi* chance; but it would not do. I believe that in a broad view of the universe, a simulation of a given elementary mode of action can hardly be explained except by supposing the genuine mode of action somewhere has place. If it is improbable that colored lights should fall together in just such a way as to give a white ray, is it not an equally

extraordinary thing that they should all be generated in such a way as to produce a white ray? If it is incredible that trillions of molecules in a fluid should strike a solid body moving through it so as to accelerate it, is it not marvellous that trillions of trillions of molecules all alike should ever have got so segregated as to create a state of things in which they should be practically certain to retard the body? It is far from easy to understand how mere positional forces could ever have brought about those vast congregations of similar atoms which we suppose to exist in every mass of gas, and by which we account for the apparent violations of the law of energy in the phenomena of the viscosity of the gas. There is no difficulty in seeing how sulphuric acid acting on marble may produce an aggregation of molecules of carbonic anhydride, because there are similar aggregations in the acid and in the marble; but how were such aggregations brought about in the first place? I will not go so far as to say that such a result is manifestly impossible with positional forces alone; but I do say that we cannot help suspecting that the simulated violation of the law of energy has a real violation of the same law as its ultimate explanation. Now, growth *appears* to violate the law of energy. To explain it, we must, at least, suppose a simulated, or *quasi*, chance, such as Darwin calls in to produce his fortuitous variations from strict heredity. It may be there is no real violation of the law, and no real chance; but even if there be nothing of the sort in the immediate phenomenon, can the conditions upon which the phenomenon depends have been brought about except by real chance? It is conceivable, again, that the law of the conservation of forces is not strictly accurate, and that, nevertheless, there is no absolute chance. But I think so much has been done to put the law of the conservation of forces upon the level of the other mechanical laws, that when one is led to entertain a serious doubt of the exactitude of that, one will be inclined to question the others.

Besides, few psychologists will deny the very intimate connection which seems to subsist between the law, or *quasi*-law, of growth and the law of habit, which is the principal, if not (as I hold it to be) the sole, law of mental action. Now, this law of habit

seems to be quite radically different in its general form from mechanical law, inasmuch as it would at once cease to operate if it were rigidly obeyed; since in that case all habits would at once become so fixed as to give room for no further formation of habits. In this point of view, then, growth seems to indicate a positive violation of law.

Let us now consider argument number 3: and remark how it fortifies number 1. Physical laws that appear to be radically different yet present some striking analogies. Electrical force appears to be polar. Its polarity is explained away by Franklin's one-fluid theory, but in that view the force is a repulsion. Now, gravitation is an attraction, and is, therefore, essentially different from electricity. Yet both vary inversely as the square of this distance. Radiation, likewise follows the same formula. In this last case, the formula, in one aspect of it, follows from the conservation of energy. In another aspect of it, it results from the principle of probability, and does not hold good, in a certain sense, when the light is concentrated by a lens free from spherical aberration. But neither the conservation of energy nor the principle of probability seems to afford any possible explanation of the application of this theory to gravitation nor to electricity. How, then, are such analogies to be explained? The law of the conservation of energy and that of the perdurance of matter present so striking an analogy that it has blinded some powerful intellects to their radically different nature. The law of action and reaction, again, has often been stated as the law of the conservation of momentum. Yet it is not only an independent law, but is even of a contrary nature, inasmuch as it is only the algebraical sum of opposite momenta that is "conserved."\* How is this striking analogy between three fundamental laws to be explained? Consider the still more obvious analogy between space and time. Newton argues that the laws of mechanics prove space and time to be absolute entities. Leibniz, on the other hand, takes them as laws of nature. Either view calls for an explanation of the

---

\* The conservation of a vortex, which consists of the preservation of a certain character of motion by the same particles, though derived from the coöperation of other laws, is, in form, quite different.

analogy between them, which no such reflection as the impossibility of motion without that analogy can supply. Kant's theory seems to hint at the possibility of an explanation from both being derived from the nature of the same mind. Any three orthogonal directions\* in space are exactly alike, yet are dynamically independent.

These things call for explanation; yet no explanation of them can be given, if the laws are fundamentally original and absolute.

Moreover, law itself calls for explanation. But how is it to be explained if it is as fundamentally original and absolute as it is commonly supposed to be? Yet if it is not so absolute, there is such a phenomenon as absolute chance.

Thus, the chance which growth calls for is now seen to be absolute, not *quasi* chance.

Now consider argument number 2. The variety of the universe so far as it consists of unlikenesses between things calls for no explanation. But so far as it is a general character, it ought to be explained. The manifold diversity or specificness, in general, which we see whenever and wherever we open our eyes, constitutes its liveliness, or vivacity. The perception of it is a direct, though darkling, perception of God. Further explanation in that direction is uncalled for. But the question is, whether this manifold specificness was put into the universe at the outset, whether God created the universe in the infinitely distant past and has left it to its own machinery ever since, or whether there is an incessant influx of specificness. Some of us are evolutionists; that is, we are so impressed with the pervasiveness of growth, whose course seems only here and there to be interrupted, that it seems to us that the universe as a whole, so far as anything can possibly be conceived or logically opined of the whole, should be conceived as growing. But others say, though parts of the universe simulate growth at intervals, yet there really is no growth on the whole,—no passage from a simpler to a more complex state of things, no increasing diversity.

Now, my argument is that, according to the principles of logic,

---

\* In speaking of directions, we assume the Euclidean hypothesis that the angles of a triangle are equal to two right angles.



we never have a right to conclude that anything is absolutely inexplicable or unaccountable. For such a conclusion goes beyond what can be directly observed, and we have no right to conclude what goes beyond what we observe, except so far as it explains or accounts for what we observe. But it is no explanation or account of a fact to pronounce it inexplicable or unaccountable, or to pronounce any other fact so. Now, to say no process of diversification takes place in nature leaves the infinite diversity of nature unaccounted for; while to say the diversity is the result of a general tendency to diversification is a perfectly logical probable inference. Suppose there be a general tendency to diversification; what would be the consequence? Evidently, a high degree of diversity. But this is just what we find in nature. It does not answer the purpose to say there is diversity because God made it so, for we cannot tell what God would do, nor penetrate his counsels. We see what He *does* do, and nothing more. For the same reason one cannot logically infer the existence of God; one can only know Him by direct perception.

It is to be noted that a general tendency to diversification does not explain diversity in its specific characters; nor is this called for. Neither can such a tendency explain any specific fact. Any attempt to make use of the principle in that manner would be utterly illogical. But it can be used to explain universal facts, just as quasi-chance is used to explain statistical facts. Now, the diversity of nature is a universal fact.

To explain diversity is to go behind the chaos, to the original undiversified nothing. Diversificacity was the first germ.

Argument No. 4 was, upon its negative side, sufficiently well presented in my "Doctrine of Necessity Examined." Mechanical causation, if absolute, leaves nothing for consciousness to do in the world of matter; and if the world of mind is merely a transcript of that of matter, there is nothing for consciousness to do even in the mental realm. The account of matters would be better, if it could be left out of account. But the positive part of the argument, showing what can be done to reinstate consciousness as a factor of the universe when once tychism is admitted, is reinforced in the later papers. This ought to commend itself to Dr. Carus, who shows



himself fully alive to the importance of that part of the task of science which consists in bridging gaps. But consciousness, for the reason just stated, is not to be so reinstated without tychism; nor can the work be accomplished by assigning to the mind an occult power, as in two theories to be considered in the section following this. As might be anticipated, (and a presumption of this kind is rarely falsified in metaphysics,) to bridge the gap synechism is required. Supposing matter to be but mind under the slavery of inveterate habit, the law of mind still applies to it. According to that law, consciousness subsides as habit becomes established, and is excited again at the breaking up of habit. But the highest quality of mind involves a great readiness to take habits, and a great readiness to lose them; and this implies a degree of feeling neither very intense nor very feeble.

I have noticed above (§ 7) Dr. Carus's dubious attitude toward the first argument. I considered in the last section his attempted reply to the second. To the third argument, he replies (§ 65) that law ought to be accounted for by the principle of sufficient reason. But, of course, that principle cannot recommend itself to me, a realist; for it is nothing but the lame attempt of a nominalist to wriggle out of his difficulties. Reasons explain nothing, except upon some theistic hypothesis which may be pardoned to the yearning heart of man, but which must appear doubtful in the eyes of philosophy, since it comes to this, that Tom, Dick, and Harry are competent to pry into the counsels of the Most High, and can invite in their cousins and sweethearts and sweethearts' cousins to look over the original designs of the Ancient of Days.

§ 27. My fourth argument it is which seems to have made most impression upon Dr. Carus's mind (§ 85), and his reply is rather elaborate.

While embracing unequivocally the necessitarian dogma, equally for mind and for matter (§ 193), Dr. Carus wishes utterly to repudiate materialism and the mechanical philosophy (§ 133). To facilitate his, thus, walking the slack-rope, he makes (§ 168) a division of events into "(1) mechanical, (2) physical, (3) chemical, (4) physiological, and (5) psychical events." The first three (§§ 169-171)

are merely distinguished by the magnitude of the moving masses, so that, for philosophical purposes, they do not differ at all. As for physiological events, though he devotes a paragraph (§ 172) to their definition, he utterly fails to distinguish them from the mechanical (including the physical and chemical) on the one hand, or from the psychical on the other. Dr. Carus seems to think (§ 176) that by this division he has separated himself entirely from the materialists; but this is an illusion, for nobody denies the existence of feelings.

The truth is, he distinctly enrolls himself in the mechanical army when he asserts that mental laws are of the same necessitarian character as mechanical laws (§ 193). The only question that remains as to his position is whether he is a materialist or not. He instances (§ 185) the case of a general receiving a written dispatch and being stimulated into great activity by its perusal, and causing great motions to be made and missiles to be sped in consequence. Now, the dilemma is this. Will Dr. Carus, on the one hand, say that the motion of those missiles was determined by mechanical laws alone, in which case, it would only be necessary to state all the positions and velocities of particles concerned, a hundred years before, to determine just how those bullets would move and, consequently, whether the guns were to be fired or not, and this would constitute him a materialist, or will he say that the laws of motion do not suffice to determine motions of matter, in which case, since they formally certainly do so suffice, they must be *violated*, and he will be giving to mind a direct dynamical power which is open to every objection that can be urged against tyichism?

Now admire the decision with which he cuts the Gordian knot!

"THERE ARE NO PURELY MECHANICAL PHENOMENA." (§ 175.)

That is,

"*The laws of motion ARE applicable to and will explain all motions.*" (§ 177.)

But hold!

"The mechanical philosopher . . . feels warranted in the hope that . . . the actions of man . . . can be explained by the laws of motion . . . We may anticipate that this conclusion will prove ERRONEOUS. *And so it is.*" (§ 176.)

At the same time,

"NO OBJECTION CAN BE MADE to the possibility of explaining the delicate motions

*in the nervous substance of the brain by the laws of molar or molecular mechanics."*  
(¶ 178.)

Yet,

"*The simplest psychical reflexes, including those physiological reflexes which we must suppose to have originated by conscious adaptation . . . CANNOT be explained from mechanical or physical laws alone.*" (¶ 186.)

However,

"*We do NOT say that there are motions . . . in the brain . . . which form exceptions to the laws of mechanics.*" (¶ 187.)

Nevertheless,

"The brain-atoms are possessed of the same spontaneity as the atoms of a gravitating stone. Yet there is present an additional feature; there are present states of awareness . . . Neither states of awareness nor their meanings can be weighed on any scales, be they ever so delicate, nor are they determinable in foot-pounds." (¶ 192.)

Clearness is the first merit of a philosopher; and what ¶ 192 comes to is crystal-clear. Dr. Carus wants to have the three laws of motion always obeyed; but he wishes the forces between the molecules to be varied according to the momentary states of awareness. All right: he is entitled to suppose whatever he likes, so long as the supposition is self-consistent, as this supposition is. It conflicts with the law of energy, it is true; for that law is that the forces depend on the situations of the particles alone, and not on the time. It is liable to give rise to perpetual motion. It was intended, no doubt, to be an improvement on my molecular theory of protoplasm, earlier in the same number. It escapes materialism. It supposes a direct dynamical action between mind and matter, such as has not been supposed by any eminent philosopher that I know of for centuries. I am sorry to say that it shows a dangerous leaning toward originality. The argument for thus rejecting the law of the conservation of energy, I leave to others to be weighed. It seems to suppose a much larger falsification of that law than my doctrine; but it is a pretty clever attempt to escape my conclusions. It rejects what has to be rejected, the law of the conservation of energy; and is far more intelligent than the theory of those (like Oliver and Lodge) who wish to give to mind a power of deflecting atoms, which would

satisfy the conservation of energy while violating the law of action and reaction. If it can have due consideration, I doubt not it will accelerate the acceptance of my views. Meantime, I do not see where that "inextricable confusion" into which I was to be led is to come in. (§ 4.)

§ 28. Little more requires to be noticed in Dr. Carus's articles. He admits (§ 2) that indeterminism is the more natural belief, which is no slight argument in its favor.

§ 29. The remarks upon the theological bearings of the theories, if they are found somewhat wide of the mark, are explained by the haste of the editor to show just what all the affiliations of my views were, before I had had time to explain what those views are. The remarks to which I refer will be found in §§ 3, 36, 81, 82, 83, 128, 203, 204. They are worth putting together.

§ 30. The doctrine of symbolism, to which Dr. Carus has recourse, seems to be similar to that of my essay "Some Consequences of Four Incapacities" (*Journal of Speculative Philosophy*, II.) (§§ 180, 183, 199.) On this head, I can only approve of his ideas.

§ 31. It is true that I wrote many definitions for one of the "encyclopedia lexicons." But they were necessarily rather vaguely expressed, in order to include the popular use of terms, and in some cases were modified by proof-readers or editors; and for reasons not needful here to explain, they are hardly such as I should give in a Philosophical Dictionary proper.

C. S. PEIRCE.

## THE FOUNDER OF TYCHISM, HIS METHODS, PHILOSOPHY, AND CRITICISMS.

IN REPLY TO MR. CHARLES S. PEIRCE.

### INTRODUCTORY AND PERSONAL.

SOON after I had received Mr. Peirce's manuscript he wrote me in a private letter as follows :

"You have not found, I trust, that in my rejoinder I have anywhere overstepped the limit of amiable disputation. If anything of that kind did, unconsciously to me, in the heat of composition, slip from my pen, I am most anxious to have it pointed out to me, so that there may be no feeling in the matter of a disagreeable kind. For if you should not mention it, I should at some future time discover it, and it would be a source of real unhappiness to me."

This is a very amiable disposition of mind. Mr. Peirce presses me very hard in the struggle for truth : he does not hesitate to take advantage of even the smallest weak point which he espies or rather which he believes he espies. He does not shrink from using plain terms, such as "absurd," "unthinking," "weak," "hasty," "irrational." Yet he preserves in the heat of the controversy a friendly spirit towards his antagonist, which I cannot but appreciate and wish publicly to acknowledge. But I would not have him change a word or soften the language of his article in the least, *for my sake*. If Mr. Peirce is wrong, I will take care of myself ; if he is right, let the truth come out.

We are both, as it were, by profession champions of truth ; so we need not mind an occasional fling if in the end the cause of truth be promoted. Especially, in the present case, I need not mind the



hard blows which Mr. Peirce deals with such assurance, for all the points at which he strikes are well protected. The fiercer the onslaught, the better the test. I feel satisfied that his severe scrutiny only serves to prove the strength of the position which I defend.

I shall speak my mind as freely and unreservedly as does Mr. Peirce, and hope he in his turn will resent plain words as little as I do. As offense is not intended, so offense should not be taken.

Let me add here in these introductory remarks that I am always open to conviction. The views which I uphold have been well considered and thought out in their most important consequences. They are consistent and well guarded in spite of Mr. Peirce's thinking the contrary, so that I feel no need of changing them. But should some unforeseen difficulty arise which would oblige me to revise the whole system of my ideas, I shall not hesitate publicly to confess it and allow myself to be lead by truth whithersoever it be.

\* \* \*

The issue of our controversy is the problem of chance—not of chance as it occurs, for instance, in the throw of dice, but of “absolute chance,” or perfect lawlessness. Mr. Peirce makes absolute chance the corner-stone of his philosophy; he propounds a radical and sweeping indeterminism, while I reject the idea, not of chance, but of absolute chance as incompatible with the philosophy of science.

## I. DIFFERENCES OF METHOD.

Mr. Peirce calls himself a Scotist and professes to represent mediæval Realism, speaking at the same time of me as a Nominalist. We find, however, that the inverse statement would be nearer the truth.

Before discussing Mr. Peirce's philosophy itself, we must examine his methods. Difference of method will produce important divergencies of opinion.

### 1. ATTENTION TO DETAIL.

Mr. Peirce takes up in his rejoinder many incidental points, which have little or no bearing upon the main issues between us. On the one hand, things of no consequence, such as my granting



that "absolute chance" like the impossibilities of fairy tales, is not unimaginable, and my saying that tychism is attractive but weak for lack of arguments, are adduced as "momentous admissions," and "inconsiderate concessions." On the other hand, Mr. Peirce catches at straws to prove a lack of information on my part. He cannot forbear calling attention to the little breach of etiquette committed in not giving an English baronet his proper title.

Mr. Peirce shows on all these and other occasions a love of the incidental, and if I were to allow myself to follow his example the battle would soon be broken up into innumerable skirmishes.

It is noteworthy that Mr. Peirce's procedure appears to be a nominalistic tradition. Nominalists, regarding universals as mere names of many particular things, have always showed a great preference for the single, the incidental, the scattered; while realists viewing universals as real things were in the habit of laying perhaps too much stress upon universalities and generalities to the neglect of the particular and individual.

Indeed, Mr. Peirce's favorite idea, which is a belief in absolute chance, is in my opinion the most nominalistic and anti-realistic proposition I have ever met with. Regularity, or natural law, is to him the product of evolution. Thus he demolishes the eternity of the universal, and eternity is only universality in time. Now suppose that eternity (i. e. universality in time) could be proved an error; then, the universality of the universal in space also will become illusory. If those abiding features of nature which we call natural laws have indeed originated from a general sporting, from chance, from a chaotic lawlessness, by a gradual habit taking, who can assure us that nature has not taken different habits in other parts of the universe?

I look upon Mr. Peirce as an extreme nominalist, or, if he prefers it, as a nominal realist soaked with nominalistic opinions. He professes to be a realist, but he rescinds the foundation of realism.

Like the bear of the hermit Mr. Peirce throws the stone at the fly of necessary connection, and in doing so kills the philosophy of realism itself.

## 2. ORIGINALITY.

Originality, wherever we find it, is pleasing ; but a hankering after originality is dangerous. Experience teaches us to regard a thinker's love of originality as one of the main causes of his going astray. Let the poet be original, but not the scientist, not the philosopher, not the searcher for truth. The conceit of being original flatters our vanity, and original ideas in philosophy are tantamount to original errors.

I do not deny the value of originality, but I do deny that it is a criterion of truth.

Originality consists in the free exercise of our imagination, and a vivid imagination is very valuable to the thinker. But it so happens that every dreamer cherishes with a mother's love the children of his fancy. And it is, therefore, necessary to be especially critical with the offspring of one's own brain.

Kepler ("who," Mr. Peirce says, "comes very close to realising my ideal of the scientific method") was endowed with an extraordinarily vivid imagination. He invented an extremely original scheme of explanation for the solar system, and expounded it with great poetical fervor in his "*Mysterium Cosmographicum*."\*

Kepler at once became famous by his "*Mysterium Cosmographicum*" and was generally admired for his originality. But his bent for hatching original ideas did not alone make Kepler what he is to us now in the history of science. A greater quality than his poetical fervor and original imagination was his rigorous self-criticism. He took notice of every little fact that did not agree with his

---

\* Kepler's scheme is, that all the regular solids, icosahedron, dodecahedron, octohedron, tetrahedron, and cube should be placed one within the other at such distances that spheres could be described between them so as to touch the corners of each respective interior and the planes of each respective exterior solid. He found, by placing the sun in the centre and allowing the planets to move in great circles on the spheres, (making the circle between the icosahedron and dodecahedron equal to the orbit of the earth,) that then the distances between the planets would, upon the whole, agree with astronomical observations.

This theory is as ingenious, as fascinating, and as original as Mr. Peirce's propositions. It has only one little fault ; it does not agree with facts. And Kepler afterwards abandoned his original theory.

theories, and for the sake of truth, of objectively provable truth, that is, the agreement of his views with positive facts, he sternly slew all those creatures of his fancy which he foresaw could not survive.

Having myself a good deal of imagination, and having tried myself many original ideas, I can appreciate the self-denial and discipline of Kepler. I have come to the conclusion that originality is only an important means of attaining truth. Our ways of reaching the truth, our methods of finding it, may deserve the praise of originality, but truth itself is never original; for truth is the faithfulness of a copy which in our representations we make of reality, and to praise ideas as original is certainly no argument that they are true.

There is no need of showing that Mr. Peirce is not just in his statement of my view of originality, by maintaining that I have advised people "think not for yourself." Confessedly he exaggerates, but in truth he misrepresents.

Mr. Peirce does not relish what I have to say on the subject, and, to pacify his mind, he does not tire of praising originality as the high-water mark of genius.

Mr. Peirce's love of originality is a nominalistic feature of his mind. A nominalist who denies the existence of universals cannot understand that everything in science must be sacrificed to truthfulness. The question, Does this idea correctly represent its respective reality? has no sense to a nominalist. The nominalist is only interested in what a thinker makes of things. The subjective conception, in his opinion, exhausts the subject. I can understand that a nominalist should be greatly pleased with originality, but a realist should not allow himself to be seduced by its charms.

Mr. Peirce's penchant for, and my distrust of, originality, have a direct influence upon our respective methods of thought. It naturally makes him bolder and me more cautious.\*

---

\* Like Mr. Peirce, Kepler had, in his days, too, thought of the possibility of making the world evolve from chance. When, in 1604, a new and brilliant fixed star suddenly appeared in Ophiuchos, he took up the problem of star-evolution. We will let Kepler tell the story in his own words as it appears in his treatise on the new star:

"Yesterday, while pondering over the problem, I was called to dinner, and my young wife served the salad. 'Do you think,' I asked her, 'if since the origin of

## 3. A MODERN PROCRUSTES.

There was a man in ancient Greece named Procrustes, who had two beds; one long, the other short. He used to lay his tall guests upon the short bed, and his short guests upon the long bed, cutting off the limbs of the former and stretching out the bodies of the latter, until they fitted the size of their unpleasant resting places. In the same way Mr. Peirce treats philosophical views.

There is the bed of the materialist and, as all processes to the materialist are purely mechanical, necessitarianism is stretched in the materialist's bed to mechanicalism. I plead, since ideas and feelings are not motions, that mental processes cannot be explained by the laws of motion, but can, for that reason, be none the less determined; but I plead in vain. That view of necessitarianism does not suit the bed upon which my Procrustes places me. Other views, however, are cut down without further ado because they are said to be nominalistic. Anything that does not appeal to Mr. Peirce's realistic mind is dismissed with a shrug.

I am neither a realist nor a nominalist, or rather, I am both realist and nominalist. I am convinced that to some extent both sides were right and both sides were wrong, and regard it as our duty to sift their propositions and accept the truth whether it be nominalistic or realistic.

We must follow the principle of hearing both sides, and not consider at all whether a statement agrees or disagrees with certain party principles.\*

---

creation, pewter platters, salad leaves, oil and vinegar, and also hard-boiled eggs had been flying in a chaotic mixture through space that *Chance* would have been able to collect them to-day in a salad?" "Certainly not in such a good mixture as this," was the reply of my beautiful wife."

Kepler rejected the idea that the world could have evolved by chance.

\* The philosophical articles of the *Century Dictionary* do not seem to be free of party spirit. An extraordinary amount of praise is given to the mediæval realists which, considering the vagaries of their propositions, they do not deserve. On the other hand, the blame for the discredit into which scholasticism has fallen is heaped upon the nominalists.

## 4. OCCAM'S RAZOR.

The most brilliant disciple of Duns Scotus was William of Occam, whose fame almost rivalled that of his master. Occam became an adversary of realism; he became a nominalist, and after him was named a method known as Occam's razor, especially useful to nominalists in their warfare against realists.

Occam's razor is expressed in the sentence: "*Entia non sunt multiplicanda præter necessitatem*," which means: Only in cases of extremest necessity are we allowed to assume the existence of hypothetical facts. If assumed facts are not absolutely indispensable, cut them off!

Occam's razor was invented for a special purpose, that of cutting off the realistic hypostatisation of abstract ideas.

I do not know which is more startling, that a realist in name, such as Mr. Peirce, should use a weapon forged by nominalists against realism, or that he whom in other respects we found in such a close contact with nominalistic methods, should not understand how to handle a nominalistic weapon.

Mr. Peirce censures me for making the statement that the formal is subjective as well as objective. This, he says, is cut off by Occam's razor.

The formal is subjective, for our sensation is possessed of form and our mind is in possession of formal thought. It is objective, for reality is not void of form and the things are such as they are by virtue of their peculiar shape.

The proposition that the formal is objective and subjective at the same time is as little cut off by Occam's razor as, for instance, the proposition that there is air inside and outside of us, viz. in our lungs and in the surrounding atmosphere.

Mr. Peirce's usage of the beds of Procrustes is cruel, but his usage of Occam's razor is inconsiderate. He should be careful in handling such a sharp knife, lest he do himself harm.

Mr. Peirce uses Occam's razor to cut off statements and facts which make his pet theories dispensable; but he forgets that Oc-

cam's razor cuts off ideas only, and when it comes in contact with facts its edge is turned.

Occam's razor is an excellent instrument to dispose of such hypotheses as absolute chance, for it declares that if their assumption is not quite indispensable, we must cut them off.

Now it either is or is not a fact that the formal is objective and subjective at once. It cannot be untrue in my philosophy while it is true in Mr. Peirce's system. My proposition of the formal being at once objective and subjective is, according to Mr. Peirce, "cut off by Occam's razor." "But," adds he, "when synechism has united the two worlds this view gains new life." So long as I say so, it is wrong; but should I adopt Mr. Peirce's system, it will pass as right.

##### 5. THE APPLICATION OF LEARNING.

Philosophers should make it a rule not to encumber their thoughts unnecessarily with learning. The great problems of philosophy are, in my opinion, much simpler than they are generally supposed to be. The art mainly consists in stating them in the simplest possible manner.

It is indispensable for a philosopher to be familiar, at least in a general way, with all the most important sciences, especially with psychology, physiology, logic, physics, mathematics, and mechanics. But he should not for that reason introduce any more than he can help their complicated details into his expositions.

Every specialist is inclined to look at things through the spectacles of his own speciality. But the philosopher who takes a higher standpoint should be on his guard. He should always endeavor to simplify matters and avoid introducing into philosophy issues which belong to a special field, and derive their peculiarities from special conditions. To confound the methods of the various sciences, or to generalise without sufficient discrimination, will throw everything into confusion.

Mr. Peirce, as we well know, has greatly distinguished himself in logic by valuable discoveries and independent investigations. We have repeatedly taken occasion to pronounce unreservedly our admiration of his achievements in this field. But we cannot ap-



prove of his application of certain methods of his speciality to philosophy in general. Mr. Peirce is inclined to look at the world through the spectacles of that new and extremely specialised branch of logic which he is at present about to invent.

One hindrance to properly appreciating his doctrines, says Mr. Peirce, lies in my "laboring under the great disadvantage of not understanding the logic of relatives," which, he adds (p. 533):

"Is a subject I have been studying for a great many years, and I feel and know that I have an important report that I ought to make upon it. This branch of logic is, however, so abstruse that I have never been able to find the leisure to translate my conclusions into a form in which their significance would be manifest even to powerful thinkers, whose thoughts had not long been turned in that direction."

I shall be glad to sit at Mr. Peirce's feet as an attentive student, as soon as he has worked out his logic of relatives, or any other subject. But I cannot now accept any of his theories on the credit of some half-developed science, be it ever so profound or intricate, until I see plainly its connection with the present issues.

Mr. Peirce trusts that his favorite ideas will find support in his peculiar conception of the logic of relatives. Judging from the quiddities which he now so confidently propounds as weighty arguments, we cannot share his sanguine hopes. His arguments, to be derived from the logic of relatives, are like promises to pay out of the returns of a gold-mine, just discovered and boomed by the owners. There may be gold in the mine, but I do not as yet take any stock in it.

Mr. Peirce promises to prove by the logic of relatives what, if it were true, he should be able to demonstrate in plain language.

I have an idea that the logic of relatives can be worked out into as clear a science as is mathematics or algebra. But what shall we say when told that the logic of relatives is really abstruse, and that he who labors under the disadvantage of not understanding this abstruse science is not prepared to grasp Mr. Peirce's philosophy? The abstrusity, in my mind, counts against Mr. Peirce's philosophy, as much as against his logic of relatives.

In my childhood I was much plagued with Latin, but as soon as I had acquired a smattering of it, I began to talk Latin to the

servants, and when they did not understand me I thought that they were "laboring under the great disadvantage" of not speaking Latin. Since then I have learned to translate my Latin into the language of the people with whom I have to deal.

Mr. Peirce seems to rely on his learning in proportion to its abstrusity; he likes to walk on stilts.

Mr. Peirce is scholarly to excess. He has a special talent of rendering issues involved. Not even his references to my articles in *The Monist* are made directly by quoting the pages on which they appear. That method would be too common. He invents a ponderous system, necessitating the reader to look twice when he wishes to find a passage,—a scheme which is original and very dignified in appearance, but makes quotation unnecessarily complicated.

Learning is a virtue, but even virtues should be used with discretion.

#### 6. THE PRINCIPLE OF POSITIVISM.

Says Mr. Peirce in confirmation of Whewell (p. 546):

"Progress in science depends upon the observation of the right facts by minds furnished with appropriate ideas."

To rely on the observation of facts is, in my opinion, a principle of positivism. That facts must be observed "by minds furnished with appropriate ideas" is undeniable, but ideas, in order to be appropriate, must be true; they must be representations of facts.

Because he relies on facts I have characterised Mr. Peirce's method as positivistic. But he indignantly repudiates "the charge" as "totally unfounded."

Positivism (which I have always carefully distinguished from Comtism, the latter being a special kind of positivism\*) is not a peculiar philosophy, but a most important principle of science.

Mr. Peirce seems to use the term positivism in a different sense

---

\* I said in *Fundamental Problems*, page 142, "The introduction of the word positivism into philosophy is the merit of M. Auguste Comte. Although we cannot accept much of M. Comte's conception of positivism we gratefully adopt the name." There are plenty of other passages in which my usage of the term positivism, as distinguished from the French positivism, is set forth, so that there could be little danger of being misunderstood.

from that in which I use it. Be it so. I shall not nominalistically quarrel about words so long as there are more urgent subjects under discussion. Noticing that Mr. Peirce does not state that all ideas should be ultimately reducible to facts, he is to be acquitted.

#### 7. LOPPING OFF THE ABSOLUTE.

Mr. Peirce thinks that an agreement between us could be arrived at. He says (p. 545):

"Dr. Carus's philosophy would, in its general features, offer no violent opposition to my opinions" (§ 16).

But the condition is (p. 545):

"To lop off the heads of all absolute propositions whose subject is not the Absolute."

As a matter of fact I have lopped off all absolutes. If Mr. Peirce were more familiar with my views he would have known that. Thus, on my part, I had done all I could to come to an agreement with him long before he asked me to do it. But I fear that having also lopped off the Absolute itself, I did too much of a good thing, for Mr. Peirce carefully records his opposition to all philosophies which deny the reality of the Absolute. (See § 18.)

I wish to improve this occasion for conciliation, by turning the tables. Mr. Peirce's views would, upon the whole, offer no violent opposition to my opinions if he would only consent to lop off the absolute-property of his absolute chance. I would even swallow his Absolute if he would promise to designate by that name some real quality of the world, or the world itself as a whole, or something that is thinkable without making one's head swim.\*

---

\* My main objection to the term Absolute is to forestall any hypostatizing of a vague abstract notion which can only serve the purpose of mystification. I suffer the term Absolute in a loose sense when it is understood that it is used loosely. I do not say, as Mr. Peirce seems to believe, "absolutely universal" or "absolutely necessary." The words universal and necessary are sufficiently significant to me without any additional emphasis.

Reality is relative throughout. Absolute existences are, if the term is taken seriously, nonentities; and the expression "The Absolute" for the whole of existence or for those features of existence which are universal and necessary is, to say the least, misleading. These are my reasons for rejecting the Absolute as a philosophical term. There is, of course, no objection to the term in chemistry, physics, mathematics, and other sciences, where it has acquired technical meanings.

Every predication of absolute, changes a real and useful idea into its caricature. To say that a complicated calculation is "absolutely true," that is, true without stipulating the condition that the methods are right, and that the execution is made without any mistake, is ridiculous; and thus the phrase "in a Pickwickian sense" (which we gratefully borrow from Mr. Peirce) would always form a drastic but adequate substitute for the term absolute. "Absolutely true" is "true in a Pickwickian sense" only. There are no absolute truths which are in this sense unconditionally true. In the same way, "absolute chance" is different from that real chance known to us in experience and instanced by the throw of the dice. Absolute chance is "chance in a Pickwickian sense."

Strange Mr. Peirce speaks of real chance when he means an imaginary absolute chance. He apparently uses the word "real" in this connection not to denote something that is a fact of experience but to express the idea of its being perfect or complete. Thus we may speak of a "real" perpetual motion, stating at the same time that it is neither real nor realisable.

#### 8. THE THEORY OF PROBABLE INFERENCE.

Mr. Peirce applies his theory of probable inference to everything; also to those cases which are unequivocally determined. He granted in a private conversation that  $2 \times 2 = 4$  admits of no exception. But of other purely formal statements which are in the same predicament, for instance, that the sum of the angles of a triangle in a plane measures  $180^\circ$ , he states as probable that they are either somewhat less or somewhat more than  $180^\circ$ , adding, "that they are exactly that amount is what nobody can ever be justified in concluding." To determine the sum of the angles of a plane triangle by measuring the parallaxes of stars rests upon a fundamental misconception of the principles of formal sciences. It would be consistent for Mr. Peirce to say, that  $2 \times 2 = 4$  is true only according to the definitions or axioms of arithmetic. But in order to know whether  $2 \times 2 = 4$  in reality, we ought to apply the theory of probable inference. Until we had verified the statement  $2 \times 2 = 4$  by applying this formula to the farthest solar systems, we should not be justified

in concluding that it is exactly true. The theory of probable inferences is supposed to help us out of this perplexity, "and within another century our grandchildren will surely know whether the three angles of a triangle are greater or less than  $180^\circ$ ."\*

There is always danger in the application of abstract ratiocination; and the theory of probable inference forms no exception to the rule. On the contrary, it is especially liable to lead one astray. There is the case of the doctor who said to his patient: "I am sure you will be cured, for I had ninety-nine patients who died during the operation, and statistics prove beyond doubt that one among a hundred will survive it. You are the hundredth."

The theory of probable inferences is often misapplied, but can it be worse misapplied than by introducing it into the province of that which is certain? There is no sense in applying the theory of probabilities to what is certain. We may doubt whether the rays of light travel in exactly straight lines, but we cannot doubt

---

\* Mr. Peirce correctly says that the axioms of geometry are now exploded. This, however, does not overthrow the reliability of formal mathematics; on the contrary, it places it on a safer basis than that of unprovable assumptions, which must be taken for granted.

We look upon the whole system of geometry as a *product of mental operations*. We perform some operations and note what their products are. We do something and mind the consequences of what we do. The problem of modern geometry is to invent a method by which we can construct in the simplest manner possible a straight line and a plane. Euclid still presupposes the existence of the plane and assumes it to be such that parallel lines do not meet. When we are able to construct the plane of Euclidean geometry, we can dispense with the axiom of parallels, for, in that case, the plane will possess the qualities it has by construction. We can very well execute other constructions in which parallel lines possess other qualities, and we shall on the basis of such an altered plan of operation be able to produce entirely different systems of geometry.

We must distinguish between the space of our mathematicians and real space. Experience teaches us that real space has three dimensions which means that from a given point every other point is determinable by three magnitudes. We might doubt (although I think there is little occasion to do so) whether the real space of our experience is truly three-dimensional, but we cannot doubt that the truths developed in the one-dimensional system of numbers, in the two-dimensional system of plane geometry, in the three-dimensional system of solid geometry, and also in  $n$ -dimensional systems each in their respective domain are perfectly reliable, for they are unequivocally determined, they are *eindeutig bestimmt*. There is no application of the theory of probabilities in a field where the products are not due to chance but result with certainty.



the straightness of lines in plane geometry. We cannot doubt that all the radii in a circle are equal, or that the sum of the angles of a Euclidean triangle are  $180^\circ$ .

#### 9. ZWEIDEUTIG BESTIMMT.

Mr. Peirce very kindly informs me that the term *eindeutig bestimmt* is a translation of a French phrase. Very well, I do not deny it. I know very well that the phrase has a long history, but I do not consider myself bound to present the whole pedigree of every term I use.

Does Mr. Peirce perhaps suppose that the French phrase is the original? If we have to go back to the original beginning at all, why does he not tell us that the French *univoque* is a translation from the mediæval Latin *univoce*, which was coined and used by the schoolmen in opposition to *æquivoce*. Neither the term *eindeutig*, as Mr. Peirce asserts, nor its scholastic original *univoce*, is an exclusively mathematical expression.

Although the term *eindeutig* is a translation of the French *univoque*, there is after all a great difference between the French term and the German term, and I have a good reason to prefer the German expression. The French term is nominalistic or even vocalistic, the German one is realistic. *Univoque* and *univocal* mean that there is only one name or one *vox*, while *eindeutig* lays no stress on the name but on the meaning of the name, denoting that which admits of but one interpretation. This is a sufficient reason for me to prefer it, and it ought to appeal to Mr. Peirce's realistic mind.\*

Mr. Peirce, maintaining that *eindeutig bestimmt* is only a mathematical term, adduces two equations, each one of which, taken singly, admits, he says, of two possible determinations.† Mr. Peirce uses these equations as an argument against my application of the term,

---

\* I wonder why the *Century Dictionary* does not mention the scholastic usage of the word *univocus* as the root of univocal. Similarly we are not told that the word *impossibilitas* is an invention of the schoolmen. Duns Scotus, Mr. Peirce's favorite philosopher, uses the terms *univoce* and *impossibilitas* freely.

† We accept in this argument Mr. Peirce's solutions, which, however, are his own. A simpler example would have been more appropriate.

adding, sarcastically: "This shows how much that argument amounts to." But his example proves at best only that there are incomplete determinations; some problems allow of several solutions. In a German township in which blue hussars are garrisoned, children used to propose to another this profound problem: "It lies under a plum-tree and is blue; what is it?" If the child questioned argues, "It is a plum," he is corrected, "No, it is a hussar." But if he argues, "It is a hussar," he is corrected, "No, it is a plum." So he has no chance of guessing right. The result of Mr. Peirce's first equation, which may be either 11.477 or 11.523, is like the conundrum of the plum-tree: it amounts to the same, viz. to nothing, and proves only that there are determinations which are *zweideutig bestimmt*.

#### 10. EXPLANATION.

The differences of method become very serious when we disagree on the very meaning of "explanation" itself. How can two debaters accept or reject one another's arguments, if their ideas of explanation are radically different?

Mr. Peirce's definition of the term "explanation" appears to me very unsatisfactory. He says (p. 57):

"I cannot admit that explanation is description of the fact explained. It is true that in the setting forth of some explanations it is convenient to restate the fact explained so as to set it under another aspect, but even in these cases the statement of *other* facts is essential. (!) In all cases it is *other facts*, (!) usually hypothetical, which constitute the explanation; (!) and the process of explaining is a process by which from those other facts the fact to be explained is shown to follow as a consequence by virtue of a general principle or otherwise."

"To explain a fact is to show that it is a necessary or at least a probable result from another fact (!) known or supposed."

My definition of "explanation," as a description in which the process described is recognised as a transformation is sneered at. Says Mr. Peirce (p. 558):

"A magician transforms a watch into a dove. Recognise it as a transformation and the trick is explained, is it? This is delightfully facile."

Indeed, the magician's trick is explained as soon as we know all the changes that have taken place. Take the whole number of

objects handled by the magician, those which he shows and those which he conceals. Let us observe how he hides the watch and how he produces the dove, and the trick is explained. Is it not?

Explanation is, as the word suggests, a making plain, so that we can look over the whole field before us, and leave nothing hidden from sight. This whole field, the survey of which is needed for the recognition of the transformation, is called the system of the explanation. After we have seen how the changes take place, and after we have described in exact formulas their modes of action, our desire for explanation is completely satisfied.

The instances adduced by Mr. Peirce prove plainly that his objections cannot be maintained. Every one of them is an instance of transformation (with the exception of the emerald vest, which, however, is not stated with sufficient completeness). Take, for instance, the following example adduced by Mr. Peirce (p. 557):

"A 'special process of nature,' calling for explanation, is the circumstance that the planet Mars, while moving in a general way from west to east among the fixed stars, yet retrogrades a part of the time, so as to describe loops in the heavens. The explanation is, that Mars revolves in one approximate circle and we in another."

Can any one deny that this explanation is a description? We draw the two orbits as correctly as possible for the required demonstration and combine the points representing the earth with those representing Mars at their successive positions. Considering the fact that we do not perceive the motion of the earth, we have to construct a diagram in which the directions of these lines are described as viewed from a stationary point. This is a description of changes that take place. It is a portrayal of the transpositions of two bodies, and the appearance which the change of this relation presents to one of them.

Mr. Peirce has neither the grace nor good-will to understand my proposition, that *explanation is always a tracing of form*. He says (p. 558):

"Forms may indulge in whatever eccentricities they please, in the world of dreams, without responsibility."

In the world of dreams, yes! But not in the world of reality.

And even the irresponsible eccentricities of dreams take place according to law.

Feeling that he mistakes my position, Mr. Peirce adds :

"Should Dr. Carus reply that I mistake his meaning, that it is only 'being in general' (§ 66), that he holds unaccountable, I reply that this is simply expressing scepticism as to the possibility and need of philosophy." (P. 558.)

Of course, I mean "being in general." As to the scepticism imputed to me, I answer, that any attempt at explaining how matter and energy, which I take to be eternal, came into being, is a wrongly formulated problem. Mr. Peirce might as well call me a sceptic, because I recognise that we cannot square the circle. (Compare "Fundamental Problems," 2d ed., pp. 283-285 and 291.)

Mr. Peirce's gravest mistake is his belief that

"In all cases it is *other facts* which constitute the explanation." (P. 557.)

The practical application of this mistake becomes fatal to his philosophy.

It is by no means necessary to pass beyond that system of facts which contains the phenomenon to be explained. We must, as a matter of course, keep completing the facts of a phenomenon until we have acquired a survey of what we call the whole system of the facts, but we have never to resort to other facts.

We are confronted every day with hundreds of facts of which we never see the whole system to which they belong, but we readily supply these deficiencies from the stock of our experience. We refer the unknown to the known. The single case under observation is referred to something with which we are familiar. Those systems of explanation which are known to us serve as patterns for others that are only partially known, and we fill out, with their assistance, the gaps of our observation.

The readiness and reliability of our explanation thus depends upon the stock of knowledge we have. The more we know, the easier shall we conquer the unknown; the more incomplete our knowledge is, the greater the number of hypothetical facts that will have to be introduced; and this always weakens the reliability of our explanations. Hypothetical facts should be introduced only in

cases of urgent necessity. However, if they are admitted at all, they have to be thought of as parts of the system under investigation, for they have been invented only because we are compelled to assume that without them it would be incomplete.

Mr. Peirce adduces the following example to prove that "other facts" are required in an explanation :

"It has been stated that a warm spring in Europe is usually followed by a cool autumn, and the explanation has been offered that so many more icebergs than usual are liberated during a warm spring, that they subsequently lower sensibly the temperature of Europe. I care little whether the fact and the explanation are correct or no. The case illustrates, at any rate, my point that an explanation is a special fact, supposed or known, from which the fact to be explained follows as a consequence." (P. 557.)

When, as in this instance, we recognise that one fact is the necessary result of another fact, we view them both as parts of one set or system of facts in which a transformation is taking place, and, unless we see the connection of the two facts as constituting one process of transformation, we cannot say that the problem is explained. When we observe changes which are the results of transformations taking place beyond the horizon of our knowledge, we are, as a matter of course, unable to give an explanation.

Mr. Peirce had perhaps in mind a special and more complex kind of explanation, which we define as "comprehension." He says (p. 557) :

"The fact to be explained is shown to follow as a consequence, by virtue of a general principle or otherwise."

Take as an instance the law of gravitation. There are the facts of falling stones and the motions of celestial bodies. Both sets of facts are explained, according to Mr. Peirce, "by virtue of a general principle," i. e. gravitation, while we say, both sets of facts are comprehended under a common formula. Mr. Peirce's conception of "explanation" rests on the antiquated view that gravitation is a principle behind the gravitating masses which compels the stone to fall. Gravitation, however, is not "another fact" foreign to the facts under consideration. It is not a principle called in from the outside. On the contrary, it is the essence and extract of the very facts that are to be explained.



Principles which have not been derived either from the facts to be explained, or from the additional facts which belong to their system, do not and cannot explain the phenomena.

\* \* \*

Comprehension is, as it were, an explanation of a higher degree. The term means a grasping together, and it actually consists in viewing two or several facts in such a way as to recognise their common features. Comprehension is a reduction of our patterns of explanation; it unites two or several of them in one formula.

For instance, it has been observed that certain objects float in water while others sink to the bottom. The observations do not seem to agree, they present two incoherent facts. When we find out that the weight of a floating body is equal to the weight of water which it displaces, we understand at once why bodies whose specific gravity is greater than water sink while those of a lighter specific gravity float. Comprehension, in this as in every other case, is the description of a process which comprises all the facts that belong to a special class in a common formula. The description must be applicable to all single cases however different they may be.

This conception of comprehension has a great advantage over Mr. Peirce's view. While he has to bring in some "other fact" from the outside, we need not introduce any foreign element. Comprehension, as we understand it, can rise from the statement of particular facts to more and more general formulations, until finally we arrive at universal laws. All the laws thus formulated to satisfy our cravings for comprehension, are found to belong to one great system of laws, and our scientists are constantly engaged not only in widening the range of our experience by new discoveries, but also in revising our statements of the uniformities of nature and, where they appear to be in collision, in bringing them into harmony.

This conception of comprehension is monistic, Mr. Peirce's is dualistic. We need not, in order to explain the facts of existence, go beyond them into a supernatural realm. Mr. Peirce must go outside of the world into non-existence when he attempts to understand the world by the principles of his philosophy. It is very doubtful whether explanations, the "essential" nature of which is to consist

of "other facts usually hypothetical," will be satisfactory to anybody except himself.

Otherness makes any fact unfit to serve as a factor of an explanation and indeed I cannot think of any instance, real or imaginary, in which the explanatory facts, be they real or hypothetical, do not form parts of the system under consideration.

There is only one instance to which Mr. Peirce's method of explanation has been applied, and I am under the impression that it has been invented solely for this purpose. Mr. Peirce's philosophy is too original to be explained by the usual methods; it must have an original method of its own. In order to explain "law" Mr. Peirce calls in "chance." His explanation must be an "other fact" and the only fact different from law is not-law, lawlessness, or absolute chance. According to my idea of explanation, law can never be explained by chance. According to Mr. Peirce, it is the only possible thing that can be called in as that "*other fact*" which is supposed to be the essential constituent of an explanation.

If Mr. Peirce's method of explanation were sound, we should have to explain order from chaos, possibility from impossibility, and sense from nonsense.

## II. MR. PEIRCE'S PHILOSOPHY.

Mr. Peirce's constant references to scholastic philosophy remind me of happy years long past when I was extremely interested in the theories of such men as Thomas Aquinas, Duns Scotus, Occam, Abelard, Tauler, and others. Together with my chum, now a sober Professor of physics at a German University, I freely indulged in the construction of various world-theories, which, alas! were quickly overthrown one after another by the slightest puff of wind. I have not lost my interest in the schoolmen, but it is considerably weakened.

Mr. Peirce's repeated praise of scholastic realism and his condemnation of any theory that he brands as nominalistic, seems to me like the method of some of our politicians who, eager to revive toryism, should censure all evils of the politics of to-day as whiggish. This comparison is not exaggerated, for there are a few Hamiltonians who

miss the refining influence of an aristocratic class and regret that the historical tradition of toryism has been so completely broken. I would not deny that there is some truth in it, and there is some truth, too, in mediæval realism, which has been neglected by the, first violently suppressed and then triumphant, nominalism. But in reviving realism the Scotists should be very careful to avoid a resurrection of its errors.

#### I. DUNS SCOTUS AS A PHILOSOPHICAL PATRON SAINT.

Johannes Duns Scotus, a Franciscan, honored since his successful defense of the Blessed Virgin's Immaculate Conception by the title Doctor Subtilis, and the very same man after whom, on account of the narrowness of his later disciples during the time of the Reformation, a blockhead is to-day called a dunce, was one of the most characteristic figures of scholastic philosophy. He lived at the end of the thirteenth century when the authority of the philosophy of Thomas Aquinas who had died March 7th, 1274, was all but universally recognised. Scotus appeared as the most powerful opponent of Thomas. Ingenious, original, bold, and buoyant in his attacks he had a short but brilliant career and died comparatively young at Cologne, in November, 1308.

While Thomas, surnamed Dr. Universalis, or Dr. Angelicus, is regarded by his order, the Dominicans, as the greatest authority in philosophical matters, Scotus succeeded in impressing his mode of thought upon the Franciscans; yet Thomas is universally regarded in the Roman church and also among Protestant theologians as the more orthodox Christian.

Almost all the ideas of Scotus were set forth in opposition to the views of others and mainly of Thomas. Thomas was a determinist, Scotus an outspoken indeterminist. Thomas says that man's action is necessarily determined by what he thinks is best. Scotus avers that man thinks in a certain way because he wills in a certain way. Man's ideas are fashioned to suit his character. His motto is, "*voluntas superior est intellectu*" and his idea of will is identified with the indetermined arbitrariness of a perfect *liberum arbitrium*. According to Thomas, God commands us to do the good because it

is good. Scotus calls good that which God commands simply because God commands it. The will of God, like the will of man is, in Scotus's opinion, undetermined, it is arbitrary. Thus God created the world not because his will was determined by some motive, but because it so pleased him; and Christ's passion and death were not really an atonement; they simply were accepted as such by God.

Without entering into this controversy of *anno olim* we might say that we side neither with Thomas nor with Scotus, but would modify the statement of the former by the criticism of the latter. Thomas goes too far when he says that whatever is recognised as the best will of necessity be done. He overlooks the power of passions. Thomas's statement would be right, if every passion were regarded as a will which has its own and independent but mistaken ideas about good. A soul whose passions are more powerful than rational considerations will necessarily be inclined to obey its irrational impulses. There is something in Scotus's criticism, but his view is no improvement. In speaking of will as superior to the intellect, did he ever ask himself the question, What his own will would be independent of his intellect? Further, when God is said to command the good because it is good, Thomas separates in a logical consideration two ideas which are identical. Scotus is right in defining good as the will of God. From our standpoint we should say, the will of God, viz., the moral order of the universe, is of a definite kind which can be ascertained by experience. To speak of the will of God as good is an anthropomorphic expression. Good is that which agrees with the will of God; bad, that which opposes it. Suppose the moral order of the universe were different, goodness and badness would change with it.

We have sketched the views of Scotus only to show the points of contact between him and Mr. Peirce. Mr. Peirce is also an outspoken indeterminist. He identifies feeling with chance, and his free will is a *liberum arbitrium*. Mr. Peirce, like Scotus, also separates theology, and, with it, religion, from philosophy.\* Scotus

---

\* The belief in a duality of truth appears quite rational from the dualistic standpoint of the middle ages, and the arguments of Scotus are cleverly devised, being based upon the supposition that the fall of man had changed the entire order of the

ridicules those who confound both, clearly indicating that he is aiming at Thomas, to whose fervent faith their conciliation was a matter of momentous and all important consequence. Scotus goes so far as to aver that something might be true in philosophy which is wrong in theology (see Ed. "Wadding" Fol. 4, p. 848)—a statement that to an honest searcher for truth must almost appear as frivolous.\*

How much more imbued with true religiosity was his great namesake John Scotus Erigena the venerable founder of scholasticism when saying: "*Non est alia philosophia, i. e. sapientiae studium, et alia religio.*"

## 2. MR PEIRCE'S ORIGINAL THEORIES.

Mr. Peirce as a controversialist and critic is like Scotus, brilliant, versatile, and powerful. But he is more; he is also constructive.

Mr. Peirce's style of architecture reminds us of neo-Platonism, and this is quite in harmony with Scotism, for Scotus, through Avicbron, derived many of his ideas from the Neo-Platonists. Mr. Peirce proposes a modern view of emanation, which starts the world from that *βυδος* of nothingness which at the same time is the womb of all existence. The primeval state of being, says Mr. Peirce, "Was mere nothing from a physical aspect," but, if it was not really nothing, what, then, was it?

It was chance.

Here lies the essential difference between Mr. Peirce and the neo-Platonists. The neo-Platonists (whose speculations, if they are treated not as philosophy, but as poetical effusions, are very profound and thoughtful) look to the Logos, or world-reason, as the beginning of the world emanation, while Mr. Peirce shows a certain contempt

---

world, so that the laws of nature prior to the Fall were different to those which obtain now.

\* Duns Scotus was a very zealous advocate of ecclesiastical supremacy, even advising, for instance, the prosecution of the Jews in order to convert them. It is a strange irony of fate that the author of the *Fons vite*, upon whose authority Scotus so largely depends and from whom he derived some of his most important ideas was an Israelite. Scotus did not know that Avicbron was a pseudonym of the Spanish Jew Salomon ben Gebirol.



for reason. To the neo-Platonist, reasons *are* explanations, while to our modern Scotist, reasons explain nothing. He says:

"Reasons explain nothing, except upon some theistic hypothesis which may be pardoned to the yearning heart of man, but must be doubtful in the eyes of philosophy . . ." (P. 567.)

Mr. Peirce goes so far as to speak of "the dullness of ratiocination's self."

Mr. Peirce's gospel would deviate in the very first verse from that of St. John, for it would read

*'Εν ἀρχῇ ἦν ἡ τυχή.*—In the Beginning was Chance!

And this chance which was in the beginning actually is, to Mr. Peirce, God, a personal God, an anthropomorphic deity endowed with consciousness. He says:

"That primeval chaos in which there was no regularity was mere nothing from a physical aspect. Yet it was not a blank zero; for there was an intensity of consciousness there, in comparison with which all that we ever feel is but as the struggling of a molecule or two to throw off a little of the force of law to an endless and innumerable diversity of chance utterly unlimited." (*The Monist*, Vol. III, No. 1, p. 19.)

And in another passage he says of chance:

"That it is a being living and conscious is what all the dullness that belongs to ratiocination's self can scarce muster hardihood to deny." (P. 560.)

Mr. Peirce's argument that all the dullness that belongs to ratiocination's self can scarcely muster hardihood to deny his proposition, sounds strange in the mouth of a scientist. But it is not strange; for I have found that enthusiastic defenders of improbable theories always fill the holes of their argumentation with abuse of those who dare to discover these holes. Call a person who doubts the truth of your statements dull, and you will frighten many a weak mind into a patient acceptance of your view.

We may rest assured that whenever a philosopher scolds he is at his wit's end. For why should he lose patience if he can prove his proposition? Thus diatribes are always symptoms that there is some flaw in one's logic and the louder one chides the sorer is the spot.

Mr. Peirce is serious in the statement that chance is a conscious being. He actually identifies chance and feeling. He says:

"Chance is but the outward aspect of that which within itself is feeling."

The primordial chance, the existence of which, according to Mr. Peirce, "calls for no explanation," has "a primordial habit-taking tendency." Whence this tendency gets into the universe of absolute chance, Mr. Peirce is unable to disclose. The deviations from the mechanical order in the present course of things, which, by the by, are by no means proved, suggest to him and justify, in his opinion, this assumption. Thus, assumes he, primordial chance ceased to be chance; it changed by a gradual habit-taking into regularities. Consciousness ceased to be consciousness and became crystallised into natural laws. Mind ceased to be an arbitrary sporting, and by becoming effete it begot, through a summation of minute effects, this material universe of ours. Accordingly, real existence or thingness consists merely in the regularities thus produced, and "physical events are but the degraded . . . forms of psychical events."

This is in brief Mr. Peirce's cosmogony, which, as the prophet of Tychism, he reveals to us in axiomatic aphorisms.

By gradual habit-taking, Mr. Peirce declares (*The Monist*, Vol. I, No. 2, p. 176), mind will at last be "crystallised in the infinitely distant future." This rather sad outlook is, in another passage, modified by a counter-oracle, which announces that "an element of pure chance survives." Why, he does not say. Irregularities, not being entirely suppressed, can increase again, and as such they are "undeveloped forms of psychical events." Says Mr. Peirce (*The Monist*, Vol. III, No. 1, p. 18):

"There are almost insensible fortuitous departures from regularity; these will produce, in general, equally minute effects. . . . Protoplasm is in an excessively unstable condition. . . . In the protoplasm these habits are to some slight extent broken up, so that, according to the law of mind, . . . feeling becomes intensified.

"This breaking up of habit and renewed fortuitous spontaneity will, according to the law of mind, be accompanied by an intensification of feeling."

This is the gist of Mr. Peirce's mental philosophy, which proclaims that "consciousness is not to be reinstated without tychism." The reappearance of chance is said to explain the origin of mind!

Our conception of mind is different. We see mind develop out of sentiency by the recognition of the regularities of the surrounding world. Reason is almost a synonym of man's ability to form generalisations, of his having and operating with concepts, of his thinking ideas. Not the arbitrariness of a wilful mind is the properly mental of man's soul, but his reason; and man's reason originates under the influence of the uniformities of the surrounding world, which impress themselves, in what we call experience, upon his existence. The more a creature recognises the regularities of existence, and the more its soul becomes an image of this world-order, which is the prototype of his reason, of the divine Logos, the higher it rises in the scale of evolution.

If chance, as Mr. Peirce declares, is but the outward aspect of that which within is feeling, we should henceforth have to look upon the roulette and dice as sentient beings.

### 3 THE FOUR POSITIVE ARGUMENTS OF TYCHISM INSUFFICIENT.

Mr. Peirce adduces four positive arguments for believing in absolute chance. They are: (1) the prevalence of growth; (2) the variety of the universe; (3) the necessity of explaining law; and (4) the existence of feeling.

By growth, Mr. Peirce does not understand the growth of crystals, or trees, or organisms. That kind of growth is a mere transformation. Mr. Peirce's idea of "real" growth is "opposed to the conservation of energy." It is not an increase of the thing growing through the assimilation of substances taken from the surrounding world; it is an actual increase of energy, not a mere change; it is a growth of the universe itself. Granted the possibility of this so-called "real" growth, and we can easily explain the evolution of the world out of the tiniest beginning. But, of course, one thing has to go: either the conservation of energy or "real growth." Mr. Peirce lets go the former, I the latter.\*

---

\* I omit here a discussion as to whether or not the conservation of energy is true or not. I need not mention that the views of our physicists, such men as Helmholtz, Mach, Maxwell, Tait, and others, differ widely from Mr. Peirce's presentation of the subject. Mr. Peirce rejects the law of the conservation of energy,

The variety of the universe is, in my world-conception, sufficiently explained by the variety of forms, for form is indeed the *principium individuationis*; a doctrine, which, but for Mr. Peirce's philosophy, I should regard as almost universally accepted. Among its advocates we find also Mr. Peirce's great master, Duns Scotus, and Scotus's teacher, Avicbron. In so far as various formations are possible, (exactly as the die can show six different surfaces,) chance plays an important part in the diversification of nature, but this chance is not to be thought of as a violation of the law, but appears to be a special case only, and a true manifestation of the law under complicated conditions.

Chance and probability are not mere subjective ideas, creatures of our ignorance, playing a role simply in our limited knowledge of the world. The words signify a certain condition of objective existence.

For instance, the probability of throwing 1 with one die is  $\frac{1}{6}$ . This means, the die is so constructed that it can show six different positions, one among them being 1; and these six possibilities are as real a quality of the die, as its weight or its color.

The die has six possible positions. Now I take a die and throw 3. Are we not entitled to believe that the throw was sufficiently determined by all the innumerable conditions which accompany the act? We confidently think so, and feel no need of assuming any absolute chance. Now I throw again. What is now the probability of throwing 1? We answer again,  $\frac{1}{6}$ . And, lo! there it is! It came at the second throw, and we ask, was our statement of the probabilities wrong? We say, no! it was not wrong, for it remains true even now. The statement does not mean that we shall throw a 1 at each sixth throw, but that (supposing the die to be perfect)  $\frac{1}{6}$

---

but retains the conservation, or (as he prefers to say) perduration of matter. I waive the question, whether this is consistent, and call attention only to another, most flagrant contradiction. Mr. Peirce states that, "not only the total amount [of matter] remains constant, but all the different parts preserve their identity"; and yet he says that "matter is effete mind." Thus when mind becomes effete, the amount of matter increases; however, when the habits of matter are broken up, mind originates, and the amount of matter decreases. This, it seems, would make any perduration of matter and of the identity of its different parts impossible.

among all the possible throws will be 1, so that supposing all the possible throws realised in an infinite series of throws, the average number of 1's among them will be the one-sixth part of the whole.

The enormous importance of chance (*viz.*, of that real chance which is no violation of the law) has been recognised since Democritus and has received a fresh illustration from the investigations of Darwin, which I need not here recapitulate.

The theory of probabilities teaches, that whatever can happen in the long course of an infinite number of events, actually will happen, and that whatever, according to the nature of things, has a greater probability, will in an infinite number of cases occur with proportionately greater frequency.

The lesson which we have to draw from this statement is, that that which we wish not to happen, should be made impossible. And this can be done, perhaps not perfectly, but approximately. According to Mr. Peirce, the evolution of mind is due to the reappearance of chance; we say that the evolution of mind is marked by man's increasing power in the restriction of chance.

The identification of chance with feeling, or even with mind, is to me an idea so grotesque, that I am inclined to regard it as a relic of gnostic speculations.

Mr. Peirce, instead of attempting to comprehend laws, as we do, seeks to trace their origin. He tries to explain their existence by growth, as if they were beings that evolve like the forms of planetary systems or the organisms of living creatures. Considering the fact that Mr. Peirce is a realist only in name, and that his philosophy is soaked with nominalistic traditions, we should say (and Mr. Peirce will pardon me that I quote the expression from him) that :

"The puzzle for him is simply the usual difficulty that plagues nominalism when it finds itself confronted with a reality which has an element of generality."

The assumption of absolute chance might be used to account for any otherwise inexplicable event, but Mr. Peirce does not countenance this idea. He warns us to be cautious in its use, like the druggist who labels his poisons "handle with care"; "I only use chance," he says, "to give room for the development of law." Hav-



ing used absolute chance to start the world with, he dismisses it. So Fiesco discharges his negro after he has done his work : "*Der Mohr hat seine Schuldigkeit gethan, der Mohr kann gehen.*"

In my criticism of Mr. Peirce's theory I said (*The Monist*, II, p. 574):

"How little, after all, we can escape the determinism of law as being a feature of the world, will be seen from the fact that the explanation for the evolution of law is presented by Mr. Peirce as being itself a law, i. e., a formula describing a regularity supposed to obtain in facts."

Mr. Peirce replies :

"Is there no difference between a law, the essence of which is to be inviolable . . . and that mental law, the violation of which is so included in the essence that unless it were violated, it would cease to exist? . . . Thus I clearly escape the contradiction attributed to me." (P. 561.)

Mr. Peirce's escape is like the disappearance of a medium from a room without doors. He must have got out through the fourth dimension. The argument is so subtle that I cannot see it, and I feel tempted to retort in a sentence quoted from my profound adversary :

"I confess, I can find only words without ideas in the objection." (P. 561.)

Mr. Peirce speaks of law as having developed out of chance, but he himself, in fact, after a fashion, explains the origin of those laws of nature which represent its present uniformities by a law of habit-taking.

That the conservation of energy should leave no room for feeling is to me an obscure proposition. The law of the conservation of energy declares only that the sum of all energy in the world, potential as well as kinetic, remains constant. If a living and feeling being renews its waste and stores up new energy in its tissues, it must take it out of the general storehouse of nature ; it must transform it, and cannot produce it out of nothing. Why should feeling become impossible, if the conservation of energy is true?

The identification of chance with feeling is, to my mind, a vagary. It is true that feeling develops mind ; mind makes deliberation possible, and deliberation implies choice. But choice is not

chance. The choice which a man makes is determined by his character. There is more resemblance between logical identity and a pun, than between feeling and chance.

#### 4 THE NEGATIVE ARGUMENT A LOGICAL FALLACY.

The four positive arguments for believing in absolute chance are untenable. But Mr. Peirce, knowing that he had to weather a storm of criticisms, has taken along a sheet-anchor, consisting of a negative argument, which, if it were true, would make the four positive arguments redundant.

What shall we say to the statement, that chance need not be explained? Mr. Peirce says:

"Chance, according to me, or irregularity,—that is, the absence of any coincidence,—calls for no explanation. If *law* calls for explanation, as Dr. Carus admits it does, surely the mere absence of law calls for no further explanation than is afforded by the mere absence of any particular circumstance necessitating the result." (P. 559.)

Mr. Peirce is a great logician, but the logical arguments of his philosophy are not sound. If the absence of law, of coincidences, of regularities, did not require explanation, the scientist would (as is but right) still have to explain the uniformities of nature, but the miracle monger would have a good time; for he could tell us boldly that, according to the rules of modern logic he is not bound to give any explanation.

It is true that while everything must be explained, the absence of everything (i. e. nothing) need not be explained; but we cannot use this pattern as a schedule which can be filled out at our pleasure. The ideas "absence of," "no," "no one," and "nothing" play a part in logic analogous to that of zero in mathematics. I need hardly remind the reader of the puzzling demonstration, that since one cat has one tail more than *no* cat, and since no cat has eight tails, one cat must have nine tails. Operations with zero act like death in the realm of human conventionalities. Death makes the beggar equal to the king. Multiply any equation that is wrong with zero, and it will be correct. Operations with zero render the impossible possible.

But let us look closer at Mr. Peirce's proposition. He avers that "the mere absence of any particular circumstance necessitating the result calls for no explanation."

Should it ever happen that the absence of any particular circumstance necessitates the result, I do not see why this absence should remain unexplained. Say for instance, a certain stronghold is taken because the enemy discovers the absence of guards in a certain part of the walls. If this absence of guards be counted as an important circumstance helpful in the conquest of the citadel (and there is no reason why we should not count it as such) can we say that while the presence of guards on all other spots of the wall has to be and can be explained as an endeavor to secure the place against a *coup de main*, the mere absence of guards calls for no explanation? The absence of guards in a particular spot of the Capitol during the siege by the Gauls, was accounted for by the steepness of the place. This particular spot was regarded as safe on account of its inaccessibility. Similarly, the absence of guards in the citadel of the Messenians is explained by the idea that the Spartans would make no attack because in that particularly stormy night a cloudburst seemed to prevent all approach.

Obviously the necessity of explaining a rule, does not confer the privilege of neglecting to explain its exceptions.

It goes without saying that Mr. Peirce's argument (even if it were formally faultless) can have no force with a necessitarian. Such a one, after having explained and proved to his satisfaction that *Gesetzmässigkeit* (or regularity such as can be formulated in laws) is a characteristic feature of the universe, is not only asked to believe that there are after all exceptions to law, but is even told that according to some paragraph in Mr. Peirce's unwritten logic of relatives no further argument is needed to prove the non-existence of law. Only Mr. Peirce's extreme love of his pet theories can make him blind to such palpable fallacies. But such are the foundations of his philosophical architecture.

### III. MR. PEIRCE AS A CRITIC.

A good general, who has to mask the weak points of his position, uses the strategem of making demonstrative sallies upon his enemy. Mr. Peirce, although apparently quite unconscious of the fact that his basic doctrines are untenable, instinctively imitates this maxim of warfare. His defence is mostly aggressive. Instead of replying to my arguments he endeavors to represent my views as incohesive and contradictory.

The present issue is not whether my views are tenable, but whether Mr. Peirce's are. However, I am glad to have the benefit of the searching criticism of so subtle a thinker as Mr. Peirce. Therefore, I willingly appear before his tribunal to expurgate myself of his charges.

#### I. THE A PRIORI AND POSITIVISM.

Mr. Peirce is greatly puzzled with my position. He quotes several statements of mine which appear to him contradictory. I said: (1) that millions of *single* experiences cannot establish a belief in necessity, (2) that necessitarianism must be founded upon the *a priori*, and (3) that the *a priori* must be founded upon experience.\* To him who overlooks the here italicised word "single" this may, indeed, seem to be a vicious circle.

All knowledge begins with experience. We define experience as the effects of events upon sentient beings, and these effects are sense-impressions of certain forms and interrelations. At an advanced stage of evolution, the formal and relational are first unconsciously, as, for instance, in counting, and then consciously, with scientific deliberation, abstracted from the sensory. Systems of pure forms are constructed out of the purely formal elements, thus gained from experience by abstraction, such as our system of numbers and the logical categories. Now the laws of these forms of thought are

---

\* That my view of the *a priori*, as Mr. Peirce claims, is "Schleiermacherian" is new to me.

applicable to all formal and relational conditions of reality. The formal and relational of reality are known to us even in those regions of the universe and in those provinces of scientific investigation which have not as yet been explored. The scientist knows them *a priori*, even before he investigates objects which he never saw before. He is acquainted with certain of their qualities, viz., with the laws of their formal and relational conditions.

Thus the *a priori*, or, as I prefer to call it, formal thought, is a product of experience, and is again applicable to experience.

Single experiences, isolated observations, innumerable particular cases cannot directly yield or reveal the laws of formal thought. So long as they remain single and isolated they will never develop into mental factors; but such is the nature of reality that the single experiences will be built up and arranged in feeling substance as systematically as, for instance, the formation of crystals or the harmonious growth of cells in organisms? When sentient creatures become conscious not only of the sensory element of their experience, but also of this system of their soul, of the formal of their psychical existence, they become rational beings; and the formal which grows with their sentiency is not an exclusive and peculiar quality of theirs; it is not purely subjective, but it has been imparted to them, piecemeal, together with the single data of their experience. It constitutes a part of their *Anschauung*; it is found in the objective world and is a general feature of reality.

Out of the formal elements of our *Anschauungen*, of the facts of experience, that organ of cognition is developed which Kant calls "pure reason."

Experience is often used to denote sense-experience only; thus Kant contrasts experience or sense-perception, which he calls a *posteriori*, with pure reason and formal thought, which he calls a *priori*. We use experience in the sense defined above, so as to include the formal element.

I am unable to form a clear conception of Mr. Peirce's view of the *a priori*. Those systems of formal thought which I regard as constructions he regards as products of analysis. He says, "They are results dependent upon the action of reason in the depths of our



own consciousness." He only grants that "their abstract and distinct formulation comes very late." He still holds that the *a priori* is innate.

In my conception, mathematical ideas, like that of the contrivance of logarithms, are inventions; and they are constructions as much as the invention of the steam-engine by James Watt.

There is one peculiarity about the purely formal which is not found in the sensory elements of experience. Our knowledge of the various spheres of the purely formal is of a general nature; it applies to any form of the same kind. This gives system to our formal conceptions, and enables us to make statements which are rigidly and unequivocally determined. It is this quality which makes them available as an organ of cognition when dealing with facts of experience. They furnish us with methods, schedules of reference, and plans which like blanks have to be filled out.

Science begins with the application of formal thought, viz., with counting, measuring, and classifying. Only with the assistance of the formal sciences can we master the material of the sensory data of experience; and thus it happens that the formal is the condition, not of any kind of experience, but of every systematic experience.

The formal sciences are the tools of cognition. That to which they cannot be applied remains unexplained, and this is the ultimate reason why processes of nature can be regarded as explained only when recognised as processes of transformation. Cognition is the tracing of form. We can understand a change only if it is a change of form. We cannot understand how anything real can disappear into, or originate out of, nothing. We have no explanation for any actual increase or decrease either of matter or energy. Whenever we see something entirely new we regard it as a new combination, the elements of which existed before.

If there were processes in the universe which could positively be proved not to be transformations we should be confronted with an unfathomable mystery; and it is a matter of course that we must not be duped so easily by the appearance of problems which cannot be solved at first sight. The advance of science which has resolved so many mysterious phenomena into plain instances of transformation

gives us confidence that this method is the only reliable maxim of inquiry. It has helped us so far, and it will help us in the future.

\* \* \*

I call my views positivism, because like the French positivists and also like Locke and his school I maintain that all knowledge is to be derived from the positive facts of experience. But my positivism is not of the old kind; it is neither sensationalism nor materialism nor Comtism. It is a new positivism broadened by a study of Kantian philosophy and Kant's problem of the *a priori*; and this new positivism, I hope, deserves the attention of the thinkers of mankind.

Mr. Peirce calls it a "straddling of the question," by which he means that a man is "on both sides of the fence," and has learned so to formulate the issues, "that both parties can readily subscribe to his propositions."

## 2. DETERMINISM AND FATALISM.

Fatalism and determinism must not be confounded. We define determinism as that view, according to which every event is determined by its conditions. The decision of a man whose liberty is not curtailed by any compulsion, so that he can act as he pleases exactly in agreement with his character, is determined objectively by the motive and subjectively by his character. A man of a certain character in a given situation will act in a way that is perfectly determinable.

Determinism, as I take it, does not exclude free-will. Nor does it exclude such chance as is, for instance, the incidental turning up of the various faces of a die.

Determinism is the basis of science, and also of ethics as a science. If the decision of a free will were merely the result of chance, why should our teachers and preachers take so much trouble to form character?

While determinism is a sound doctrine, fatalism is a superstition. Fatalism excludes the idea of free will. We define fatalism as that view which regards the fate of a man, whatsoever he may do, as fixed. For instance, we call the orthodox Mohammedan a

fatalist; he looks at the flame without quenching it, because he argues, "if it is Allah's will that my house burn down, it will burn down, whatever I may do."

In my reply to Mr. Peirce (*The Monist*, Vol. II, p. 572) I approvingly quoted from him a passage containing the word "fate," adding that here "the word 'fate' must be understood as Mr. Peirce understands it." In spite of this warning, Mr. Peirce employs this quotation made from *his* writings as if it were mine, and calls attention to the inconsistency involved in the different application of the word. This charge of inconsistency is neither judicious nor fair!

We define "necessary" as "that which is determined."

Determined means describable. Necessity is that feature of things which makes it possible that we can, in proportion to our knowledge, describe beforehand or predict the course of events.

Kant's definition of "necessary," as given in his "Critique of Pure Reason," is narrower. He says:

"That the coherence of which with the real is determined according to universal conditions of experience is necessary, or exists necessarily."

This means in our phraseology, "that feature of the real which is determined by the laws of form."

The word "determinism" has been inappropriately used in the sense of fatalism, in which sense it has to be condemned as a superstition. The term is needed, however, to denote a basic principle of great value. "Determinism," if used in the sense which the word literally indicates, means "that view which regards all events as determined by its conditions." Determinism does not mean that everything is decreed by some fate, that some Deity or other power has determined the course of events. It means that definite conditions produce definite results, and that the results can be ascertained and described, if *all* the conditions are known.

Fatalism is a peculiar kind of determinism, and, indeed, an obviously erroneous one. Fatalism rests upon a dualistic conception, regarding necessity as a foreign force residing outside and above things and compelling them to act in a special way. It is the Moira of the ancients and the Kismet of the Mohammedans. The monistic view knows nothing of a foreign force or supermundane *fatum* en-

acting a special course of affairs. Necessity, in the monistic conception, simply denotes the determinedness of results by its conditions; it signifies that *Gesetzmässigkeit*, or regularity according to law, is a feature of reality. We need not repeat again that the monistic view of determinism excludes neither chance nor free-will. It only excludes "absolute" chance and that indeterminable arbitrariness which is sometimes said to be free-will.

If events were not determined, if under the very same conditions the same causes could bring about different results, so that no regularities formulable in laws existed, the world would be a chaos and no cosmos, absolute chance would prevail, and science would be impossible.

Mr. Peirce not only confounds fate and necessity, but he also identifies them with resistance, and with reality. My idea of necessity has as little to do with the experience of reaction as, for instance, with the idea of density, or with pleasure and pain. To confound such heterogeneous concepts must be productive of confusion. No wonder that Mr. Peirce makes the confession that these ideas seem to him "of a mixed nature."

That my presentation of the case of Determinism *versus* Free-will results in "a doctrine to which the advocates of free-will will generally subscribe as readily as their opponents," is used as a reproach; but I do not take it as such, for my intention is not to side with one party, but to bring out the truth of both views.

### 3. NATURAL LAWS, DESCRIPTIONS.

Mr. Peirce makes the following allegation of inconsistency. He says of me:

"The declaration (§ 198) that 'natural laws are simply a description of nature as nature is,' and that 'the facts of nature express the character of nature,' are nominalistic. But in another place (107-116) he says distinctly that uniformities are real." (P. 531.)

I am unable to detect any inconsistency in these expressions. The gist of these three statements is this: the formulas usually called natural laws describe certain uniformities of reality.

The expression "description of nature" is by no means nomi-

nalistic. If law is said to be a description, it is not a mere name, but presupposes the existence of some objective reality for the description of which it has been formulated.

#### 4. CAUSATION.

Mr. Peirce's usage of the word "cause" is very unsettled. He says (p. 538):

"The original idea of an efficient cause is that of an agent, more or less like man."

The original idea of "cause" is the struggle of reaching an end or bringing about a certain state of things. The Latin *causa* means "a lawsuit."

In a similar way, the German *Ursache* does not mean the original thing, but a "seeking." *Sache* is the English *sake* and Gothic *sakjö*, meaning "struggle," or "quarrel." It is derived from the same root as the verb "to seek."

Like *causa*, the word *Ursache* was used as a legal term.

Mr. Peirce further states:

"The modern mechanical conception, on the other hand, is that the relative positions of particles determine their accelerations at the instants when they occupy those positions." (P. 538.)

"In dynamics, it is the fixed force, gravitation, or whatever else, together with those relative positions of the bodies that determine the intensity and direction of the forces, that is regarded as the cause." (P. 540.)

"The practice which I endeavor to follow in regard to the word *cause* is, to use it in the Aristotelian sense of an *efficient cause* in all its crudeness." (P. 541.)

"When my idea is a more general and logical one, I prefer to speak of the explanation." (P. 541.)

No wonder that some causes are prior to their effects, others simultaneous, and that effects may even be prior to their causes! Using the word in various senses, Mr. Peirce becomes so entangled about causation, that in mustering the ideas force, position, reason, law, cause, and explanation, he no longer knows which is which.

\* \* \*

Mr. Peirce being unable to bring any consistency into the usage of the term "cause," drops it entirely as a philosophical word. This is Dr. Ironbeard's method, who kills his patient to save him pain.



There was a time when I felt inclined to follow that plan of dealing with words in this predicament. But I found out very soon that there is not one difficult word in philosophical language which is not or was not at some time or other almost universally maltreated by the professional thinkers of mankind. What, then, is to be done? Shall we eradicate all old terms that are erroneously used and create a philosophical Volapük, which will have the advantage of being unincumbered with the errors of a long historical inheritance, but the disadvantage of being nowhere spoken and nowhere understood, except by its inventors?

Dr. Ironbeard's method of dealing with terms is radical. It imitates the method of the social reformers who, on finding something wrong in society generally, propose to tear down the entire social structure, and begin the world over again from its beginning.

Most of the terms which have been in use for centuries and even millenniums, I have found to correspond to a special want of expressing some definite reality or constant group of realities or important relation among realities. The misuse of different words almost invariably has its origin in a consideration of the name alone, to the neglect of the reality denoted by the name. And misuses can be mended only by carefully investigating the realities themselves for the denotation of which the words have been invented. If we were to make a clean sweep of the "superstitions," soul, God, cause, natural law, etc., because in many minds there are superstitious notions connected with these ideas, we should soon have to invent new terms for the realities which necessitated the formation of the old ones. The great bulk of religious and philosophical words originated because in each case there was an actual want of a phrase to denote some specific reality. The errors of the various terms arise because our ideas concerning the nature of these realities have not as yet been matured, and it is the office of the philosopher to contribute his mite toward their clarification.

Causation, in my conception, is transformation. Take any system of conditions and let it somehow be changed. The event which starts the change is called the cause, the new configuration

produced, the effect. The various factors of the system are the conditions or circumstances.

Taking this view, I *do not say* that the effect is the cause transformed. The total effect is the cause plus all the circumstances transformed. The effect is something radically different from the cause. The cause is always an event, that is a motion of some kind; the effect, a new arrangement, a new formation, a new state of things, or perhaps the dissolution of an old state of things.

While cause and effect are different, the whole process of causation, including cause, circumstances, and effect, is to be viewed as one fact, or, rather, as one system of facts; and a process of causation is explained, (as we have seen above) as soon as it is so described that we recognise it as a transformation.\*

There is a popular usage which calls the cause of the falling stone gravitation. This kind of cause is not an event, not a motion, but a law of nature, and I prefer to call it "the reason" for the stone's fall.

Mr. Peirce defines a reason as follows:

"A reason, in one sense, is the replacement of a multiple-subject of an observational proposition by a general subject, which by the very conditions of the special experience is predicable of the multiple subject." (P. 558.)

\*It is a matter of course that frequently several events coöperate to bring about an effect. In that case we have our choice, either to speak of several causes, or to treat the coöperation of all of them as *the* cause, or to select one of them to be called the cause, while the others may be counted among the conditions.

The limitation of a system of causation depends entirely upon the purpose of our inquiry, and we must here, as in many other things, use discretion.

Mr. Peirce concludes, that according to my view of causation we can, in a relatively uniform motion, such as the flight of a cannon ball, regard the motion of every moment as the cause for the motion of the next moment. I say "relatively," for absolutely uniform motion does not exist. I grant this, but I do not grant what Mr. Peirce regards as a contradiction of mine, that in that case the cause would be equal to the effect. A man who knows the artifices of the hair-splitting Eleates and the other conundrums of logic, should know that every second of time is different from every other second; 12 o'clock is different from 1 second past 12. He who denies this, has only to miss a train in order to be converted. And how much more different than the moments of time are the various moments of real motion, for in every moment the moving body is in another place, with changed relations; and if that does not constitute a difference, we should have to deny the existence of motion.

This somewhat stilted definition seems upon the whole to agree with what I also call "a reason." All the reasons by which we comprehend nature are formulated in statements which describe those general features of reality which we call "laws of nature."

Who does not see that causes (i. e., events which produce effects) and reasons (i. e., the formulas by which we comprehend the uniformities of nature) are two radically different ideas, and who can deny that the denotation of these two radically different ideas, by one and the same term, must and actually does bring about lamentable confusion in the minds of philosophers! Accordingly, let us call them by different names; never mind what we call them, but let us distinguish them. I regard the usage stated here as the most appropriate. We call "the cause" of the stone's fall that event which removed its support; but when we inquire after the reason why the stone falls, we want to know the law of nature which describes in a general formula that quality of stones which makes them fall.

##### 5. THE FUTURE IN MENTAL CAUSATION.

It seems as if some evil genius had caused Mr. Peirce to cross my position everywhere, even where I should expect to find him in perfect agreement.

Concerning mental and mechanical causation he first startles me with an italicised proposition which declares:

*"There is no mechanical truth in saying that the past determines the future rather than the future the past."* (P. 539.)

Mr. Peirce apparently intends to discredit the belief that the past determines the future. He adds:

"We continue, for convenience, to talk of mechanical phenomena as if they were regulated, in the same manner in which our intentions regulate our actions, (which is essentially a determination of the future by the past,) although we are quite aware that it is not really so." (P. 539.)

In other words, Mr. Peirce contends that our view of mechanical causation is based upon an analogy with mental causation; the latter being a determination of the future by the past, we conclude that the former is regulated in the same manner.

This is an old error which rests on the supposition that cognition begins with introspection or self-knowledge. The truth is that all cognition begins with objective observation.

We have to say, (1) that man's view of mechanical causation has not been fashioned after the model of mental causation, and (2) that the future actually enters as a factor in mental causation. We do not believe that the future determines the past, but it does determine the present.

Should we judge of the causation of mechanical motions from our own mental experience, we should certainly reach other conclusions than we do, for the most characteristic feature of mental causation, that which essentially distinguishes it from mechanical causation, is the fact that the future actually enters into it as the main factor.

We as rational beings, and the lower animals also on a smaller scale, do know to some extent the future. We know by experience the effects of certain actions. This fact of the future's being partly known, makes it possible for the future to enter as a factor in mental causation. I go so far as to maintain that there is no mental causation except some consideration of the future be contained in the motive cause. The presence of a plan, of an end kept in view, of an aim to be reached in the future, is exactly what distinguishes the purposive action of thinking beings from mechanical events.

#### 6. MENTAL CAUSATION.

Mr. Peirce has discovered in my expositions of mechanical and mental action what he believes to be a flagrant contradiction, and, as if it were the exhibition of my scalp, displays it triumphantly (§ 27) in capitals and italics. "No objection can be made," I said, "to the possibility of explaining the motions . . . of the brain by the laws of molar and molecular mechanics." And "yet the simplest psychical reflexes cannot be explained from mechanical or physical laws alone."

Is this really a contradiction, or is it Mr. Peirce's inability to discover the agreement between the two statements? Let us see.

Take a little toy fish of tin with a small iron rod in its snout,

floating in the water, and push the fish so that it shoots forward with a certain velocity in a straight line. Now take a magnet and hold it at a short distance from the prolonged path of the fish. The fish at once changes its course; it now describes a curve which according to the laws of mechanics is determined (omitting any other possible modifying circumstances) by the momentum of the push, the velocity of which is gradually diminished by the friction of the water, and the attraction of the magnet. These are the data, and from these data the motion of the fish is unequivocally determined by the laws of mechanics.

Now, when we speak of the motion of the fish, we mean the motion, and not the iron rod, or the qualities of the iron rod, in its snout. While speaking of motion or the laws of motion, and while calculating the curve of a motion, our ideas move in a perfectly defined sphere of abstraction from which all other things and considerations are excluded. This method of abstraction which is the essence of human thought and also of that special kind of human thought called science, is the way by which alone we are enabled to arrive at clear distinctions and lucid explanations. We have to keep our various abstractions stored in an orderly manner in our mind, each one in a special box. If we do not distinguish the different spheres of abstraction and their limits, we shall soon confound all issues in a hopeless chaos.

But we find, on further examination, that in this limitation of the description to the abstract sphere of pure motion only a part of the process before us is described. The description explains fully, exhaustively, and satisfactorily the mechanical aspect of the case, but it does not explain why the magnet attracts iron. The attraction of the magnet consists in the definite qualities of (1) the magnet, (2) the iron, and (3) the medium between them. When we inquire after an explanation of the physical qualities of things, we enter into another sphere of abstraction, viz., that of physics. That physics will have to be explained as a domain of molecular mechanics may be mentioned incidentally.

Take another and simpler instance: the fall of a stone. The motion of the stone, its increasing velocity during the fall can be



explained according to the laws of mechanics ; but that quality of the stone called gravity, which is the reason of its fall, cannot be deduced from the laws of mechanics. The gravity of a mass is treated in mechanics as the given fact or datum, an investigation into the nature of which is excluded from the sphere of mechanics. He who demands of mechanics an explanation of gravity searches in the wrong box.

When we come to the investigation of psychical phenomena, we strike a feature which is entirely absent in mechanics, physics, and chemistry. It is the appearance of feeling. Feelings vary according to the various impressions made by surrounding objects. The same objects making the same impressions, special kinds of feelings come to stand for or to represent their respective kinds of objects, and thus feelings acquire meaning, feelings become ideas. This peculiarity of sentiency, that it has acquired meaning, is the characteristic feature of "mind."

When speaking of mind I refer to all those phenomena of meaning-freighted feelings which ensoul thinking beings ; and the domain of psychology is thus again quite a distinct domain of abstraction.

Now let us return to the contradiction of which Mr. Peirce accuses me.

An idea which physiologically considered is a special brain-structure or combination of brain-structures, reacts upon a given stimulus, which, let us say, is the sound of a certain word. The word is a sound-symbol and the word possesses a certain meaning. The word spoken having the same meaning as a special idea that is thought, while its brain-structure is agitated, possesses a quality comparable to chemical affinities. This peculiar word will serve as a stimulus for this peculiar idea. It will not (at least not directly) stimulate other ideas—as little as a chemical that has no affinity for the ingredients of another chemical will cause a reaction. Why the motion takes place calls for a psychical explanation, but the motion itself takes place in strict accord with the laws of mechanics.

But are not the laws of mechanics annulled by the laws of physics, and those of physiology by the laws of psychology?

- No, they are not annulled, but modified.

A piece of iron that falls to the ground with the same velocity as a stone of equal weight will be held up by a magnet strong enough to hold it. This is not an annulment of the gravity of the iron ; it is not a reversion of the law of gravitation ; gravitation holds in this case as good as in any other. It is only a modification and a complication. We must remember that the law of gravity does not say, the non-supported piece of iron or stone will drop ; it says that all bodies are attracted by the earth with a definite force depending upon their mass and position. And this attraction takes place in our example ; the iron supported by the magnet retains all its inherent gravity, which is constantly asserting itself, although counteracted by the force of the attraction of the magnet.

Since the mechanical, chemical, psychical, etc. qualities represent reality in various abstract aspects, we should know that there are no purely mechanical, no purely chemical, no purely psychical phenomena. Every real phenomenon, i. e. the original whole from which the abstractions have been made, presents a complex state of things of which many various aspects can and must be taken.

I repeat now without fear of contradiction or miscomprehension, that brain-motions are perfectly explainable by the laws of molar and molecular mechanics, while psychical reflexes, not being purely mechanical processes, cannot be explained by mechanical laws. The properly psychical and the properly mental are other elements of an entirely different nature from the mechanical and the physical. They belong to a radically different sphere of abstraction. He who tries to explain the psychical by the mechanical, looks for his explanation in the wrong box. And he who regards the proposition that the mechanical laws hold good for all motions without any exception, but that they cannot be called upon to explain that which is not motion, as a contradiction, has not as yet learned practically to apply the method of abstraction.

It is strange that we have to give this little lesson in the elements of abstraction lore to so prominent a logician as Mr. Peirce. We feel inclined to exclaim : "Art thou a master of Israel and knowest not these things?"

## STRAY SHOTS.

There are a number of incidental comments aimed at scattered points of my position. I call them "stray shots"; they have exploded without harm. While going over the battle-field I shall pick them up and will throw some of them back into Mr. Peirce's camp, whence they came.

Mr. Peirce is in the habit of calling every approach to his views "deep," while divergencies are branded as "shallow."—

Hume's scepticism is called Leibnitz's principle, by which latter Mr. Peirce apparently means that innumerable single cases of experience alone do not constitute certainty. Why Mr. Peirce demands that Hume's conclusion which Leibnitz never would have countenanced, should be identified with Leibnitz's principle from which it is derived is not apparent.—

How easily Mr. Peirce changes his opinion! Venn's "Logic of Chance," which Mr. Peirce so much admired formerly, has become "a blundering little book."—

Synechism and agapasticism, viz., the principle of continuity and the idea of love as main factors of evolution are nothing new. I have always defended them, although not in the peculiar way that Mr. Peirce does.\* In his article "Evolutionary Love" he appears to me unjust toward Darwin. I do not think that I should improve my propositions, which are in their way synechistic as well as agapastic, by adopting either Mr. Peirce's terms or his presentation of these principles.—

Mr. Peirce says, he does not doubt that my idea of mental causation was intended to be an improvement on his molecular theory of protoplasm. I can assure Mr. Peirce that I had no such intentions. I held my view long before I ever had a chance of knowing Mr. Peirce's molecular theory of protoplasm. Moreover, I am unable to discover any similarity between his views and mine.—

---

\* See my article on "The Continuity of Evolution" in *The Monist*, Vol. II, No 1; and also "Monism and Meliorism," p. 73, where "the struggle for the ideal" is contrasted with "the struggle for life."

I took pains to explain that, if we disregard the notion of form, every transformation, that is, every case of causation, will appear as a most miraculous and inexplicable event. To illustrate my view I said that "*supposing we had no idea of the laws of form or only an incoherent and fragmentary knowledge of them,*" it would be "a very wonderful thing" that two congruent regular tetrahedrons when put together will form a hexahedron—a body which is something new." And I added to this statement, "*but the laws of form do perfectly and satisfactorily explain it.*" How great was my astonishment to see Mr. Peirce with great complacency take up the problem and explain it! Indeed, it is true. That the combination of two congruent regular tetrahedrons will make a hexahedron, is wonderful *only* to him who does not understand the laws of form. Otherwise, it is not wonderful. I was amused at Mr. Peirce's ingenuity to prove to me that it is a case of  $8 - 2 = 6$ .—

There is a difference between the combination of two tetrahedrons and of the atoms  $H_2O$ . Mr. Peirce tells me, that the one is ideal, the other real—"a difference which to his Scotistic mind is very important." Did Mr. Peirce think, indeed, that I was not aware of this difference, or does he mean to establish a rule never to compare the relations as developed in the sciences of pure forms to the relations that obtain in reality?—

Says Mr. Peirce in one passage, there is a difference between the ideal and the real, which to his Scotistic mind is very important. In another passage he declares that "the nominalist alone makes a sharp distinction between the abstract and the concrete."—

Mr. Peirce smiles at the endeavor of reconciling religion with science. For he thinks:

"It is a thing which will come to pass of itself when time is ripe, and that our efforts to hasten it have just that slight effect that our efforts to hasten the ripening of apples on a tree may have." (P. 545.)

Mr. Peirce forgets that the religious fruits of the conciliation between religion and science are our own sentiments. He who says that man should be indifferent about working out the truth, on the plea that truth will take care of itself, is comparable to the apple-tree, that refuses to work out the ripening of the apples. The proposi-

tion to let religion and science work out their destinies, one of which is their mutual agreement, of themselves, is irreligious and also unscientific. Truth will not take care of itself if we do not strain all our efforts to find truth; and the kingdom of heaven will never come unless (as Christ taught, Matt. 11, 12) "it suffereth violence, and the violent take it by force."—

The same Mr. Peirce who says that our efforts to hasten the conciliation of religion with science are useless, believes in miracles and proposes a theory that prayer can work miracles.—

Several philosophers, such as Locke and Hegel, have complained of the uselessness of the logical law of identity  $A = A$ , and also of its barrenness for any practical purpose. The law of identity has been invented nevertheless, because there is a want for it; and this want, in my opinion, was felt because the statement of sameness (as set forth in *The Monist*, Vol. III, p. 70, et seqq.) is one of the most elementary and important forms of reasoning, being indispensable, for instance, in mathematics where it appears as equations. We may simply laugh at the old logicians

"Who whirl in narrow circling trails,  
Like kittens playing with their tails."

We may impatiently discard the whole proceeding as empty talk, yet I submit that we had better try to understand the meaning of their unprofitable exertions and the drift of their apparently meaningless argumentations. If we regard the principle of absolute identity as the formula of sameness (in the sense explained in the quoted passage, *The Monist*, Vol. III, No. 1, p. 70, et seqq.) emptied of its contents we shall understand why logicians wasted so much energy on an entirely barren subject. We shall readily condone their mistakes in consideration of the importance of the subject. It is difficult to say how much we have profited by their blunders.—

Mr. Peirce uses the terms analytical and synthetical in a new sense for reasons which he explains at greater length in his "Theory of Probable Inferences." He says, "analytical reasoning depends upon associations of similarity; synthetical reasoning upon associations of contiguity." I willingly grant to the scientist and the philosopher the liberty to change the historical meaning of terms if the



traditional usage is not helpful in our dealings with the facts which they were invented to describe. However, we must not change a term without good and sufficient reasons. In the present case, I still prefer the traditional usage of the terms "analytical" and "synthetic."—

Mr. Peirce takes the liberty of changing terms for himself, but he resents it in others.—

Mr. Peirce disapproves of the usage of the word "construction" in the sense of systems of formal thought, such as the decimal system, etc., etc. "Because," he says, "the word is imperatively required in the theory of cognition to denote a mathematical diagram framed according to a general precept." On the strength of this argument we might as well disapprove of calling churches, mosques, houses, cottages, or any kind of edifice, "building," because the word "building" is imperatively required to denote business-buildings.—

Mr. Peirce says that according to my statement (in ¶ 163) "every element of compulsion is to be excluded from the conception of necessity." Having never made such a statement, I looked up the passage, which is the last but one paragraph in *The Monist*, Vol. III, No. 1, page 86, and find that Mr. Peirce must have misread the sentence, "compulsion excludes free will, and necessity does not," which, of course, has an entirely different meaning.—

Mr. Peirce identifies evolution with real growth, regarding it as opposed to the law of the conservation of energy. He regards everything as a product of such growth, or *Erzeugung*, and adds, "I fancy it is this cautious reflectiveness of my procedure which especially displeases Dr. Carus." Mr. Peirce does not use the word "bold." He says, "cautious reflectiveness."—

I did not say that causation is to be explained from the law of the conservation of matter and energy. I said (*The Monist*, Vol. II, No. 4, p. 566) that the law of the conservation of matter and energy throws light upon the problem of causation. The law of the conservation of matter and energy and the law of causation describe the same thing under two different aspects. If we understand the one, it will help us to understand the other.—

Kant's chapter on the Architectonic of Pure Reason is well

known to me, but I think that Kant was possessed of a peculiar love of architectonic which has contributed not a little to rendering the system of his philosophy unnecessarily labyrinthine.—

It is surprising to find a man whom I always regarded as a Kant scholar of first degree saying that "Kant makes space a necessary form of thought." Now, as a matter of fact, Kant does not make space a form of *thought*, but of *Anschauung* or intuition. We cannot understand Kant unless we understand this distinction.\*—

Kant conceives of causation as a necessary sequence. Mill, who objects to the idea of necessity, replaces Kant's words "universal" and "necessary" by "invariable" and "unconditioned," a substitution which was made with the outspoken intention of radically changing the meaning of the phrase. Mill's terms are *not* "more exact," as Mr. Peirce says, but different. They are worse than less exact to a Kantian, and can appear more exact only to those who take Mill's view, which is nominalistic. And this substitution of Mill's is regarded by realistic Mr. Peirce as a mere "rewording of Kant's definition"!—

Mr. Peirce makes too much of the idea of "*Erzeugung*, which," as he correctly says, "is Kant's word for the sequence of effect from cause." Yet Kant's idea of *Erzeugung* does not conflict with "the modern mechanical doctrine." Kant says in that very same chapter, "*Aller Wechsel (Succession) der Erscheinungen ist nur Veränderung*," i. e., "All change (succession) of phenomena is only transformation." (!) Does not Mr. Peirce know that Kant calls every world-conception that stands in contradiction to the mechanical principle "a philosophy of indolence," or "*faule Weltweisheit*"?—

The same Kant who proposed a mechanical explanation of the evolution of the starry heavens, objected very strongly to that kind of explanations "which derive all order from chance"; and speaking of Epicurus's "absolute chance" (!) he adds: "Epicurus was

---

\*For details see, in *The Monist*, Vol. II, No. 4, page 518, et seqq., and 527, et seqq., my articles, "Mr. Spencer on the Ethics of Kant," heading iv, and "What Does *Anschauung* Mean?"

I now forgive Mr. Spencer; for if a Kant scholar like Mr. Peirce can fall into this unpardonable mistake, why should not Mr. Spencer, whose knowledge of Kant's writings is, as he confesses himself, extremely limited, have the same privilege?

even so reckless (*so unverschämt*) as to demand that the atoms should deviate from their straight course without any cause." Mr. Peirce has either overlooked in Kant these passages, or, if he has read them, he has never taken them to heart.—

Mr. Peirce objects to my statement that according to his philosophy the domain of mind is characterised by absence of law. He argues: "Is not one of my papers entitled 'The Law of Mind?'" Yet this law of mind, he states two lines further on, "requires its own violation." (P. 552.)—

The "sporting" of the primeval chance, Mr. Peirce says on page 552 of this number, is "not undetermined and indeterminable," because "its ultimate result must be an entire elimination of chance from the universe." Shall we understand that the "arbitrary sporting" of the primeval chaos, with which Mr. Peirce (according to *The Monist*, Vol. I, No. 2, p. 175) begins his cosmogony, was determined? If absolute chance is determined, why not call such a philosophy "determined Indeterminism"? We try hard to understand Mr. Peirce, but sometimes we really have to give it up.—

Physiology teaches that memory alone changes feeling into consciousness, but the consciousness of Mr. Peirce's original Chance is without memory and habit.—

Chance, a being living and conscious, has, according to Mr. Peirce, created the world, but the ultimate result of evolution must be an entire elimination of Chance from the universe. Thus it appears that the creation of the world is an act of divine suicide. The world-process is a slow degeneration of God, finally ending in his complete annihilation.

#### RETROSPECT.

In summing up the result of the whole battle, we find that there is not a single question on which we have to yield or even modify our position. Our position remains the same, while Mr. Peirce's position has become glaringly untenable. There is one point, however, in which justice demands that we should recognise that he is right. I should not have called Hamilton "Mr.," but "Sir William." I can, however, assure Mr. Peirce that this mistake

of mine (which in all my allusions to Hamilton occurs only once) was a mere slip of the pen; it was not ignorance on my part and still less was it any disregard of the rules of politeness.

We are obliged to reject the favorite ideas of Mr. Peirce, and have only to add that our esteem for him has not been lessened, in spite of all disagreements, and notwithstanding the flaws we have detected in his reasoning. On the contrary, our admiration for him as a dialectician has been greatly increased, for, in truth, we have never before seen propositions so untenable in their nature, so odd and almost bizarre, as those of "absolute chance," of "matter as effete mind," of "feeling as being the inner aspect of chance," and of "real growth as opposed to the conservation of energy," defended with greater adroitness.

Mr. Peirce is unusually familiar with certain branches of learning, of which he has made a specialty, and also with general philosophy; but he has original ideas, and he prizes them too highly. Where he makes no use of his originality, he does extraordinarily good work. Thus, most of his papers on logic, published in sundry magazines, are, in their critical as well as constructive parts, strictly scientific and almost free from apocryphal speculations. Only slight hints in them have been a puzzle to me and other readers of his essays. Of late, however, Mr. Peirce has come out more explicitly with his peculiar philosophy, and we regret to say that the more he allows his original ideas to enter into his thoughts, the more warped are his theories.

While we regard Mr. Peirce's original ideas as erroneous, we must say that they are nevertheless highly interesting and stimulating. His propositions are presented so vigorously, so attractively, so brilliantly, that while perusing his articles, we find them remarkably suggestive; we enjoy them as we do poetry. They read like a romance of the origin of the world or a fairy-tale of metaphysics.

Mr. Peirce's views should receive the consideration of all earnest students of philosophy; for he goes to the root of its main problems, and his very errors are instructive.

EDITOR.

## THE FOUNDATIONS OF THEISM.

### I. THE REALISM OF THEISM.

IT IS commonly alleged that there is deeply seated in the human mind a belief in the existence of a supreme being, and that the prevalence of such belief is evidence that it has a basis in supernatural revelation. It is urged in reply to this assertion, that this belief is not universal, and that in any case its presence cannot be regarded as satisfactory evidence that is well founded. It is known that the disposition to worship is aroused by grand and beautiful objects; and as Darwin well remarks in one of his letters, the natural sentiments of the sublime and the beautiful easily assume a personal direction. Scientific explanations, moreover, push a personal source of things ever further from us, and it is becoming apparently more easy to doubt or deny any such source whatever.

Prevalent human instincts and intuitions are, however, the result of experience imperfectly or perfectly digested, as the case may be. In most instances they yield to analysis something of value. A more plausible explanation of the theistic instinct is the anthropomorphic one. Man knows that he originates many movements, both of his own body and of other material things, and he knows of no other real source of such movements. He therefore, in his primitive state, before scientific explanations are attained, naturally refers motions in nature to an original personal source. This, it may be supposed, is the natural habit of the unsophisticated mind, and is at the bottom of theistic belief, whether as unexplained in consciousness, and therefore an instinct, or as a distinctly formulated belief. The phenomena of nature must have originated somehow, and there is no other conceivable source of motion than a personal one.



Facts developed by scientific research tend to weaken this anthropomorphism. The indestructibility of matter means that it has never been created. The conservation of energy states that matter has always been in motion. The law of organic evolution is supposed to do away with the necessity for creative intervention in the origination of plants and animals. Finally, the observed facts of the evolution of mind show that this, the light of the world, grew like the organic beings which it inhabits. Nothing higher than man has been found, and there seems to be no ground for suspecting the existence of any higher mind. And man himself dies and undergoes dissolution, like other organic bodies. The result of this use of the facts of science is agnosticism, at least. We know of nothing beyond what they teach, and some agnostics go so far as to say, "ignorabimus," we shall never know. Agnostics, however, have their faces set in different directions. Some rest in it as a relief from mental toil, as persons more theologically inclined join a church. Others, believers in the progressive evolution of knowledge as of other phenomena, set themselves to explore the unknown country, believing that our opportunities in this direction are practically unlimited.

Let us look again at this anthropomorphism which is so deeply seated and so widely spread. Its essence is the fact that we control our own bodies in a great degree and that our material organs obey the behests of our mind. We do things for, to us, satisfactory reasons, and for satisfactory reasons we leave many things undone, which we could readily do. What has science done towards explaining this most ordinary phenomenon? We may truthfully say, absolutely nothing. It remains a fact that a majority, if not all animals, move their bodies in their entirety or in part, because they have sensations. In the lower animals these sensations are merely either sense-impressions from without, or they are from within, being produced by their physical condition. We rise but little in the scale, when effects of memory are evident, for we find that many actions are due to experience of the result of former actions. With still higher development, mental organisation becomes more apparent, and the reasoning and emotional states have more and more

distinct outcome in intelligent acts. But the mechanism by which the act is called forth by the mental state, has never been explained.

The difficulty lies here. A sensation, or a state of mind, weighs nothing. A material body, let it be a cell or a mass of cells, as a muscle, weighs something. How then can the former move the latter? From a mechanical point of view, it cannot be done. For that which has no weight to set in motion anything which has weight, is to violate the law of the conservation and correlation of energy. And this law is not only an *a priori* necessity, but it has been demonstrated *a posteriori* in so many cases that exceptions cannot be thought of. So a school of physiologists say that *it is not done*. No animal eats because it is hungry, or drinks because it is thirsty. The man does not direct the muscle of his arm when he writes, nor those of his tongue when he speaks. But it is easy to see why such a school of physiologists includes but an infinitesimal part of mankind.

There is a school of evolutionists who account for the whole matter in harmony with the views of the physiologists above mentioned. I refer to the Post-Darwinians, who account for evolution by natural selection exclusively. That is, animals originally moved aimlessly in all directions. Those whose movements were beneficial to them, survived, while those whose movements were not beneficial, or which were injurious, perished. As frequent motions in a given direction lead to habits, so were inaugurated movements which were habitually beneficial to the actors, which have therefore persisted and multiplied. Thus were established the multifarious habits of animals and men. Consciousness had nothing to do with the process. It merely acted the part of the onlooker, being simply aware of what went on. "Like the locomotive whistle," says Huxley, "it made considerable noise, but did none of the work."

To a person familiar with the facts of the evolution of the structures of animals, this seems like a most inadequate theory. It is a commonplace that no kind of selection, either artificial or natural, ever originated anything. Selection simply selects between existing alternatives. The fundamental question of evolution is, What is the origin of things? What is the fate of things originated? is a sec-

ondary question. To this first question the Post-Darwinian reply must be, that everything possible has originated no one knows yet how, so that what has survived was necessarily to be found in this *embarras de richesse*. This is an enormous assumption, and one to which the history of the life of past and present ages lends no support. No such multifarious and promiscuous variation is known to have occurred in living or in extinct organic beings. But if the variations have not been infinite, then the chance of the existing one having been hit upon becomes greatly reduced, and the chance of its having occurred at the same time in individuals of opposite sex is still smaller. Finally, the chance of its not being immediately bred out by the overwhelming numbers of individuals not possessing it, is indeed infinitesimal. In fact, it is evident that variations of structure must have appeared in numbers of individuals of a species at the same time, in order to secure survival. This indicates a common cause of general application. That such causes have existed and been effective at all periods of past and present time is amply proved by the facts of geology and paleontology. The most influential in effecting change of form and structure has been the motion of the body and of its parts necessary to secure its food, to defend or protect itself from dangers, and to reproduce its kind. The direct mechanical effects of these motions on all the materials of the body may be traced in the successive stages of the forms of past ages to those of the present time.

The objections above made to the theory of multifarious variation of organic forms, apply with equal force to the theory of multifarious movements of organic beings as furnishing the source of intelligent habits. An additional and especial objection to the latter hypothesis is the fact that it does not recognise the well-known adaptability of animals to new situations and circumstances. If the events of life were a routine moving with mathematical precision, the theory of origin from multifarious variations would have a better foundation; but this is not the case. Food, friends, and enemies do not appear in stated periods, quantities, or qualities. Emergencies are common, and variation of circumstance is the rule. Without sensation, uniform habits would but lead to destruction.

Everything which should not be presented in the habitual form and at the habitual time would be neglected. Food and drink would be refused, or not obtained; defense and reproduction would not be attempted under the proper conditions. In fact, the conduct of living beings would be no more intelligent than that of inorganic matter in motion, were sensation to have no share in the process. But as soon as we believe that the habits of animals are due to hunger, thirst, and the perception of temperature, resistance, etc., their acts become intelligible, and the formation of habits becomes a necessary consequence of memory or the faculty of subsequent recognition of sensations experienced at a previous time.

It is, in this connection, of great interest to recall the diverse effects on our mental history of sense-impressions, as compared with the effect of thought. Sense-impressions are not remembered in the proper sense of the term. The repetition in memory is always vastly more indistinct than the original state of consciousness; so much so as to be a very different thing. Thought, on the contrary, when remembered at all, is an exact repetition in quality of its first presence. The presentative consciousness has one quality; the representative and re-representative have another quality. This shows us that the structural arrangement of brain substance concerned in the latter forms of consciousness have a far more permanent quality than that due to the former. They thus constitute more permanent acquisitions, and this being the case, must have a most important bearing on evolution.\* This is because it is a representative state which determines action. The process of determination may become so rapid as to be almost instantaneous; but it had to be learned, and the representation was what gave the act its character and which organised the machinery of the automatic or reflex act.

I here refer to the low degrees of consciousness sometimes called subconsciousness, and the expression, "the subliminal consciousness," introduced by F. Meyer. All shades of consciousness intervene between the most distinct forms and the unconsciousness

---

\* *Proceedings of the American Philosophical Society*, 1889, p. 495.

of the reflex state. Intelligent subconsciousness is a low stage in this evanescent series. Stages on the passage to and from sleep, and other forms of unconsciousness due to physical causes, are properly termed subconscious. There are reflexes which are due to mechanisms which we inherit from our animal and human ancestors, which are sometimes accompanied by consciousness. The amount of intelligence displayed will depend on the function involved. Experiments on vertebrate animals show that intelligent adaptation of the movements of the body have been transferred forwards in the brain during the course of evolution. Thus, a fish which retains the medulla only, will guide itself through the water so as to avoid danger. If the cerebellum and thalami are left to a reptile, it will avoid destructive acts. But if a mammal is deprived of its hemispheres, its actions are without design, and it is incapable of self-preservation.

It may be that in the temporary absence of the higher consciousness, the lower forms which once existed in our ancestors may be revived, as in some of the elements of our dreams, and in some forms of cerebral disease, when much of the blood is withdrawn from the cortex or parts of it. The amount of consciousness necessary to the performance of intelligent acts depends on the novelty of the situation. Many of the theories on this subject, however, take it for granted that intelligent acts arise in primarily unconscious states. This is only credible on the supposition that such acts have arisen by natural selection only, a view which I have combated on a previous page. Some authors use expressions which can only imply unconscious consciousness. This is of course absurd and self-contradictory. No source but sensation can be found for intelligent acts.

It is true that there are some movements of organic bodies which have an intelligent appearance, to which we cannot ascribe consciousness. Such are those of the spermatozooids and of the leucocytes. Some of the lowest animals and plants cannot be yet proved to be conscious. We cannot now explain the nature of the movements which these forms exhibit, but they will probably yield to research. Enough it is for our present purpose to know that the



majority of animals are conscious for a large part of their lives. And we have abundant evidence to show that movements inaugurated in conscious states may be performed, so soon as learned, in unconsciousness, and become part of the mental furniture of the animal.

It seems, then, that the control of ponderable matter by mental states is not the exclusive prerogative of man, but is a phenomenon of common observation in the animal kingdom. The facts indicate that it is characteristic of mind to move resistant and tri-dimensional matter under suitable conditions. These conditions are rigid, but within the limits which they define, the sequence is definite. It is difficult to believe in anything which is in direct violation of mechanical necessity, and a mere hypothesis to that effect would not deserve a moment's consideration. But the belief that the body, or parts of it, are moved in direct obedience to mental states is founded on more numerous observations than are most of those beliefs which we hold to be true. In fact there is no scientific doctrine better supported by observation and experience than this one. On this ground alone, then, we are compelled to believe in something in the universe which is supermechanical, or extra-mechanical. We may call this supernaturalism, or occultism, or what we like, but the fact remains. We have in it the germ of theism, anthropomorphic, if you will, but one which grows in importance as we come to examine further into the characteristics of mental action.

Before going into this part of the subject, I will refer to the part played by mind in evolution. From what has gone before, it is evident that this part has been an important one. If structures are produced by motions, it is clear that habits produce structures, and *vice versa*; and that under the law of natural selection only the useful and harmless ones have survived. It follows, then, that progressive evolution of form is secured by the presence of consciousness, and must, sooner or later, fail without it. With development of intelligence the progress must become more continuous and rapid. The facts of paleontology confirm such a hypothesis; since the more intelligent animals (Mammalia) have generally supplanted the less intelligent, (Reptilia and Batrachia), whenever brought into conflict

with them. The supremacy of the intelligent over the unintelligent *Mammalia* is also clearly shown by research into their past history. The modification of type, or evolution, has also become more and more rapid as time has advanced and intelligence developed.

There is another reason why the intervention of supermechanics into the process has been necessary to secure such results as we observe in the evolution of life. The law of inorganic evolution is, as Spencer epitomises it, "the integration of matter and the dissipation of energy." Natural chemical reactions when not interfered with by human intelligence, produce solids and give out heat. In other words, they result in death and not in life. To produce life something different from chemical energy has been necessary. And as the case is a parallel one to the evolution of the types of life, we may suspect that the agency at work has been a related one. It is some form of energy of the vital class which is able to overcome the bonds which hold dead matter in their adamantine grasp; and it is evident that such an energy could have been organised only in some region where mechanics of a superchemical order prevail. If we take a large view of the universe the alternatives of life and death present themselves clearly before us. The law of the latter is the integration of matter and dissipation of energy. The law of the former is the converse; the loosing of the bonds of matter, and the production of mechanism for the raising of the type of energy. The first is catagenesis, the latter is anagenesis. The end of catagenesis is the extinction of all mind and all life. Anagenesis sustains both. The best foundation for our belief in anagenesis is that it exists. Catagenesis has not destroyed it, and this fact must lead us to suspect that it is the product of an agency which is superchemical; and the only such that we know is consciousness.

In the presence of such a far-reaching hypothesis we are called upon to consider more particularly the relations of mind to its physical basis. The essential condition of the existence of mind as we know it, is metabolism. The substance\* of the nervous cells must be

---

\* Recent experiments conducted in the laboratory of the Johns Hopkins University show that the cytoplasm of cells, which are exhausted by labor, is vacuolated.

in a state of decomposition and recombination ; old material loosing its chemical bonds and giving forth energy, and new material arriving to undergo the same process. The energy thus produced displays the phenomena of mind, and as such differs widely from the inorganic energies of heat, light, etc. The extent to which it displays habits depends on the part of the nervous structure where it is produced. In the spinal cord it is strictly automatic, and as we approach the hemispheres the so-called voluntary element becomes more apparent, until a region is reached where conception, deliberation, and judgment have their seat. In this region energy is purely mental in its attributes, and it unlocks the executive mechanism of the body, and puts it in action in accordance with the needs of consciousness. So far, mechanical laws explain the order of events. The supermechanical resides in the mental content and its effects on the outgoing energy. No quantitative relation can be shown to exist between the results of the mental processes of classification, conception, judgment, etc., and the amount of incoming or outgoing energy. Indeed it is plain that none can exist, if the statement already made be true, viz., that thoughts are without weight. This part of the subject requires critical treatment, but the general result is included in the above statement, which is sufficient for our present purpose.

Since consciousness possesses such extraordinary relations to matter we may well suspect that it has a wider distribution than comes within the purview of our present limited ken. Why should it not protect and nourish itself under conditions different from those which prevail in our planet? The one condition necessary to it is metabolism—which means free energy. The kind of physical basis cannot be important, provided it be capable of exhibiting this kind of non-automatic energy. Automatism and all its reflex consequences are the death of consciousness, as every one knows. From such a type of energy all the fixed types of energy must have been derived, and with them the types of both mental and physical structures. In its freest form it should have as a physical basis a form of matter which should be without habits, but always ready to undergo a catagenetic change into routine energy and ultimate unconsciousness.

Such a medium should be unspecialised matter, and the consciousness inhabiting it would be a creator. Such consciousness would be readily transmitted wherever the physical basis should be suitable, and one such substance is our protoplasm. The probable inferiority of protoplasm as a physical basis is indicated by the long and tedious education which has been necessary to enable beings made of it to attain a high order of intelligence. In such a basis anagenesis is slow, and catagenesis is easy. Other bases might be imagined where the reverse would be the case. No assumption can be made as to a constant and limited amount of consciousness in the universe. That such is the case is supposable; but it is also supposable that the amount of suitable physical basis may be increased by a process of assimilation of non-conscious matter, as is done by animals in digestion and reproduction. This process might continue until all matter should be brought into that generalised condition which is necessary to the continuance of consciousness. The entire universe would then be conscious, and a maximum limit would be reached. In the primitive consciousness, whatever its extent in space in the Universe, we have the Supreme Being or Person.

## II. THE IDEALISM OF THEISM.

What I mean by the above expression is the theism which is supposed to be demonstrated by idealistic metaphysics. There are two forms of this alleged demonstration, both of which have for their starting-point the basis of the idealistic philosophy. This basis is the fact that we know nothing of matter excepting as sense-impressions. From this it is inferred that were conscious beings to become extinct, matter would no longer exist. It is also a consequence of this belief that what we observe of the conduct of matter, which we call by the name of natural law, is of purely mental origin.

If now the universe consist wholly of mind, the totality of it, either as reduced to a body of general laws, or to a single comprehensive generalisation, or concept, is one form of idealistic God. The other demonstration is as follows. Since matter exists as mental states, and since these mental states are common to mankind,

who are mortal ; since these mental states reproduce themselves from generation to generation, it is inferred that a permanent mental state exists, which possesses the permanent sensations we call matter. And this common mind of humanity is God.

The difference between these deities is this. In the first case he is an abstraction of the human mind and therefore not a person apart from such men as are capable of the generalisations of which he consists. In the second case he is a person apart from humanity. The validity of either demonstration to the thinker depends on his point of view. To every one but the idealist, the first proposition is atheism. The evidence for the second is metaphysical anthropomorphism, and would be a demonstration, were the theory of idealism well founded.

The fact that we only know matter as sense-impressions does not, in the opinion of realists, prove that it does not exist as the resistant and extended. Resistance of each part to the movements of other parts (energy), and extension in space, are conditions about which we have a great deal of information. Our lives are spent in overcoming the one, and in getting round the other. Our methods of dealing with it represent the antithesis of those employed in thought-processes. The latter are best performed in the absence of the muscular exertion which is so necessary in dealing with the former. I have referred to the well-known difference in consciousness between sense-impressions and the representation and re-representation of them. The difference certainly implies a difference in the immediate sources of the respective kinds of consciousness. The one is produced by something different from that which produces the other. In short, the one is produced by the contact of matter external to our physical basis, and the other is produced by a modification of brain-structure; and in the first place by that simplest form of it which is the cause of memory. The effect of such observation is the conviction that matter exists as something outside of consciousness or mind, in spite of the fact that we only know it in consciousness. In a word, consciousness and knowledge imply the existence rather than the non-existence of something which is known.



The fundamental actualities are, then, subject and object ; or, in popular language, mind and matter. Philosophy includes the sciences which embrace the knowledge of both subject and object ; but the practical philosophy is the science of the mutual relations of the two. It may be said that subject and object are opposite sides of the same reality, but this form of expression appears to me to be no more accurate than the statement that energy and matter are opposite sides of the same thing. As energy is the motion of matter, mind is the intelligence of matter ; and both may be called properties of matter with equal propriety, since both are impossible without a physical basis. Mind, however, differs from energy in possessing some intrinsic qualities which are in essence independent of the qualities of the physical basis ; and these intrinsic qualities are the forms of logic. These are, however, but a part of the totality of mind, although they underlie or penetrate all its representative activities.

While mind then cannot exist without a physical basis, it remains to be considered whether any other objective world is necessary to its existence. It is sometimes alleged that consciousness could not exist without an objective, exterior to its physical basis. If, however, consciousness is a necessary attribute of free energy, the latter purely metaphysical speculation has no foundation. The "intuition of Being" (Rosmini) would exist, albeit not much specialised, in the absence of multifarious objects ; but the forms of logic would characterise it nevertheless.

It is alleged that we can never know matter as it is, because our observation is restricted to the mutual relations of its component parts. In this assertion our intelligence necessarily concurs, but this need not cause us to relax our exertions in the pursuit of knowledge. The practical philosophy is, as already remarked, the knowledge of the relations subsisting between mind and matter, so that our most valuable acquisition will be in the end the laws of a relation. We may well postpone our endeavors after the absolute, even if we can ever attain a knowledge of it. The realist is content to believe that if we do not know "things as they are in themselves," it is because of the imperfection of our senses. But we are constantly discover-

ing new aids to research, and we can put no limit to our power in this direction.

The research into the relations of subject and object, means to theology, an investigation as to the existence and nature of Deity, and as to an existence for conscious beings in other than terrestrial life. The pure idealist reaches an affirmative answer to these problems by a short and easy route, based on a study of the intrinsic nature of mind alone. The pure realist reaches a negative conclusion by an equally short cut, by considering the properties of matter alone. Not a few thinkers entertain both doctrines at one and the same time, although they are mutually exclusive and contradictory. No wonder that they reach what Montgomery well terms "the puzzle of puzzles." But the rational conclusion from this deadlock must be, that there is something wrong with the methods of both sides. To the practical mind it seems that the vice in both methods is the failure to harmonise properly with their own, the facts adduced by the opposite side in the discussion. And it is indeed evident that that cannot be the final philosophy which restricts itself to a consideration of mind alone; or that which restricts itself to a consideration of matter alone. That men should pursue different lines of research is natural. Those whose minds are capable in the fields of conception naturally prefer idealistic studies; while those whose especial genius lies in the direction of mechanics, easily pursue materialistic research. What is needed is a combination of the two fields of ability in the same mind.

A considerable class of serious people, observing the diversities between the schools of philosophy, regard such studies as useless. Since they have not the disposition or ability to solve the question for themselves, they find it best to rest in uncertainty, which has optimistic or pessimistic tendencies according to temperament and education. The optimist has faith that all is, and all will be, well; while the pessimist takes the opposite view. Both are sustained in their position by those teachers who teach the impotence of our faculties and the uselessness of knowledge. Such appeal in support of their position to the facts already cited; the imperfection of our senses; the relativity of knowledge; the inscrutable nature of mind

and matter, etc. This position is, however, a plea of avoidance, and it will be time enough to listen to it when the avenues of the increase of human knowledge are permanently closed. This they are not at present.

The key to the position is the doctrine of evolution. Here we behold the interaction of subject and object, both in our own persons and in the inferior beings which are with us, and which have preceded us on earth. That mind has not sprung full-fledged upon this planet, is clear; and that it has made wonderful progress in power, is equally clear. Why did it not appear with all its powers "in the beginning"? The answer obviously is, "the intractability of matter." Why has it progressed in face of this obstacle? The answer is, the tractability of matter. Mind, through its intrinsic quality, has coerced matter, in ever increasing degree, and the limit of its capacity in this direction plainly has not yet been reached. Its most important conquest has been that of its own physical basis, and next to it is the conquest of the world of objects by which it is surrounded. Its last conquest will be the knowledge of its destiny, as a projection of its known past. To this end the knowledge of its own constitution is essential, but this is not all, as the pure idealist would have us believe. The knowledge of external relations is also essential, for we can in no state of being escape them. Psychic life is an "internal adjustment to external relations," quite as much as is the physical life, as it is defined by Spencer in the phrase just quoted.

The Deity of evolution indicated in the first section of this paper, will not satisfy the pure idealist. He is not an absolute, since He is compelled to respect relations. But we find Him to be just, which he evidently is not if absolute. He is anthropomorphic, and not an abstraction of the human mind. And yet as the seat of rationality, and as the director of free energy, He possesses the function of creator of whatever is possible. The evolution of independent human minds has been only possible through education, and here as elsewhere, teachable students have met with greater success than the stolid.

It has been already pointed out that the process of evolution

may be either progressive (Anagenesis) or retrogressive (Catagenesis). This is well known to be the case with organic types, where degenerate phyla are common. It seems, indeed, that in the order of things degeneracy has occurred wherever it has been possible; that is, under circumstances which permitted vegetative life through lack of stimuli to energetic motion. There has always been "room at the top"; but only when all the lower fields of existence have been for the time being filled, has there been room at the top only. The history of mental evolution has accompanied that of general structural evolution, and for similar reasons. It is well illustrated in human society to-day. These facts suggest that this has been the history of all evolution, since they harmonise with the order of evolution observed in our solar system, in which the inorganic has preceded the organic, or Catagenesis has preceded Anagenesis. If the forms of non-vital energy represent a result of Catagenesis, we are not bound to look on minerals as in any sense living, as has been suggested by Haeckel and others. Most, if not all, forms of chemical energy have sunk below the vital level, and certainly far below the possibility of displaying consciousness. We are here looking over unexplored territory, and one whose elucidation is entirely in the future, but we may put our ideas in order, if we do nothing more.

Besides his relations to the impersonal materials that surround him, man has essential relations to his fellow-man. The laws of these relations are ethics. Much is written and spoken against the utilitarian or evolutionary theory of ethics. I cannot, however, escape the conviction that this theory offers the true explanation of the rise of the ethical sentiment in mankind. But to understand it aright, we must include the growth of the social sentiment, as well as that of the rational element, in the evolution of justice or right. The opponents of this view sometimes commit the error common to all those who do not understand the nature of mental evolution. Some of them imagine that it is necessary to suppose that, in harmony with this theory, every man decides his every act solely in accordance with what appears to him at the time to subserve the lowest form of selfishness of which he is capable. The doctrine, on

the contrary, maintains that habits of honesty and justice are the result of the education of the ages, and that men obey such motives according to their developmental status ; that is, in accordance with the evolution of the habit of preferring the higher to the lower forms of utility. The further question of what it is that has raised the standard of utility, is answered by what we see going on around us. The fear of the law ; the love of the approbation of our fellows ; the sympathy with our fellow-men ; the fear of their indignation ; all these are educators of great potency, which have always been active. These motives, organised as character, are compulsory, and it would be strange if they have not been effective in producing results.

Practical ethics has to do with material beings and their material possessions, i. e. with person and property. Without the objective, the content of ethics is purely ideal, consisting of love and hate, and the justice and injustice of opinion which might be the outcome of those sentiments. These sentiments are realities of the subjective, representing the affections, as the form of thought constitutes the rational faculties. But if we endeavor in thought to deprive love and hate, justice and injustice, of all material consequences and implications, we deprive those sentiments of much of their value if we do not abolish their occasions altogether. It appears to me at least doubtful whether hate and injustice could exist in a society consisting of disembodied minds, if such beings could be imagined ; a supposition which I cannot entertain.

If ethics cannot exist without material expression, it is clear that, on the other hand, they cannot exist without a subjective foundation. Thus ethics is the highest expression of the relation between mind and matter. Ethics is the practical application of the mental powers to human relations, and the more complete the evolution of mind, the more perfect is the ethical practice. Thus the evolution of the mind is the guarantee of ethical progress, and the more intelligent the mind, the more easy will the evolution be. As in all education, the laggards experience the severities of compulsion, while pains and penalties are avoided by those who perceive their approach and do not await their arrival. Here we have the utilitarian ground of our numerous ethical and religious organisations.



They invite men to a *priori* subjective theory, and objective practice, so as to preserve society from the evils of inferior and painful methods of compulsion, which lie at the basis of ethical evolution. It is the dread of this method which rouses a natural repugnance in the minds of many men to the doctrine which teaches of it. But it must be remembered that the instruments of evolution change with the thing that is evolving, and the conditions of progressive ethics are the stages of progress of the mind. What is necessary for the education of the lower mind is no longer necessary for the higher. This is not only a truth of philosophy, but the fact may be discerned in the religions which men have made for themselves. They describe the ethical state of their authors, and prescribe the treatment appropriate to it.

Our knowledge of some parts of evolutionary history is meagre, and on some of its chapters we are absolutely in the dark. This is especially true of the causes of the appearance of life and consciousness on the earth. Spontaneous generation has not been proven, and the immediate source of sensation is unknown. The conclusions enumerated in the preceding pages are derived from evidence presented in more or less complete fragments. But the thesis remains true that mind possesses a limited control over its physical basis, but one which is sufficient to account for the main direction of the evolution of those organic forms which possess it. And it is also true that the essential forms of the rational mind are not due to corresponding qualities of the physical basis. These forms are: the principles of identity, of abstraction, and of generalisation or conception. These characteristics constitute the idealistic essence of Theism. But we look to the realistic element of Theism for the demonstration of the distinct personality of God.

E. D. COPE.

## LITERARY CORRESPONDENCE.

### GERMANY.

THE name of Cesare Lombroso is now more and more mentioned in Germany, not only in psychiatric, juridical, and sociological works, written for the learned public, but also in the newspapers and magazines. By the side of occasional recognition of his doctrine of the born criminal and genius, we meet—and these are the majority of the cases—with violent attacks on it, which not seldom exhibit real ignorance of the views of the celebrated Italian investigator. Lombroso himself is partly to blame for this unfortunate circumstance, for his writings, with their mountains of undigested material, are so lacking in unity and perspicuity that misconceptions are very apt to arise.

The German translator of Lombroso, DR. H. KURELLA, psychiatrist in Kreuzburg, in Silesia, has recently given to the world a synoptical exposition of Lombroso's theory of the born criminal, under the title *Cesare Lombroso und die Naturgeschichte des Verbrechers*, Hamburg, 1892, Richter. The author not only expounds the doctrines of Lombroso, but also deals critically with them, and, although upon the whole his sympathies are with the views of the Italian scientist, he nevertheless believes that the existence of a fixed type of the *delinquente nato*, embracing all special forms of criminality, is yet a question of doubt. On the other hand, MAX NORDAU, a widely-read author of ours, gives unqualified recognition to the theories of Lombroso, fully accepting the idea of "degeneration," first introduced by Morel into science and further developed by Lombroso, and, in completion of the work of his master, extend-

ing this idea to art and literature. In his work, *Entartung*, the first volume of which was recently published by Carl Duncker, of Berlin, and is dedicated to Lombroso, "his dear, admired master," he says: "Degenerate types are not always criminals, prostitutes, anarchists, and idiots. They are often writers and artists, and these exhibit the same mental, and frequently also the same physical, traits as those members of the same anthropological family that satisfy their diseased instincts by means of the murderer's knife or the cartridge of the dynamitard, instead of with pen and pencil.

People who are acquainted with Nordau's previous works will perhaps imagine that this latest book of his is simply a mass of journalistic ebullitions which can lay no claim to *scientific* value. This, however, is wrong. Nordau is not only well acquainted with the patho-psychological literature of this province—especially with the French—but he also turns his knowledge to scientific account, which psychiatrists like Pelman and others have publicly admitted. Taking it as a whole, Nordau has presented in this first volume of his work a good psychology of mysticism—good, that is, for all who accept the association psychology. Nordau's expositions embrace all the psychological theories which belong in this province, with their applications to individuals and to the tendencies of modern literature and art. With respect to the first point, the author is right in saying that he does not offer here anything new to the professional psychologist, but he is wrong in his theory that psychologists will read this chapter with impatience, for his exposition is unquestionably elegantly written. Of much greater interest is the second part, in which a diagnosis of imbecility is rendered upon the English pre-Raphaelites, the French symbolists, the Tolstoys, and Richard Wagners. The chapter on Richard Wagner will especially attract attention for its severity. Nordau closes it with the words, "of all the aberrations of the present time, Wagnerism is the most widely diffused and the most important. The playhouse at Bayreuth, the *Bayreuther Blätter*, the Parisian *Revue Wagnerienne*, are lasting monuments by which the future will measure in wonderment the dimensions of this degeneration and hysteria of our day."

Nordau throws light upon numerous mooted phenomena of

modern art and literature, pointing out their diseased features. One is really surprised at the extent of his work. All in all, it may be foreseen that Koch's doctrine of the "psychopathical minor factors"—or those psychical factors which constitute the border-line between mental health and disease—will clear up much more extensive fields than they have, when applied in the direction indicated by Nordau. KOCH has now published the third part of his work, (which I have repeatedly mentioned in *The Monist*,) and thus completed it. He concludes his last volume with these words: "The domain of the 'psychopathical minor factors' is a wide and very interesting one. Whosoever enters profoundly into it will learn to look at much in life with different eyes from those with which he began, will understand many men and many human acts, which before he did not understand. There are yet many scientific treasures to be unearthed in this field, and I hope that I shall win many a coadjutor. I hope, also, that qualified men will make this theory of the psychopathical minor factors fruitful in wider fields and for greater problems."

It is a common belief that it is pre-eminently in our time that psychical disorders and psychical minor factors play so great a rôle. But that in the sense of Nordau they are not of so recent origin a careful reader will learn from a new work of LUDWIG GEIGER, the well-known historian of literature and civilisation (Paetel, Berlin). Its title is: *Berlin, 1688-1840: Geschichte des geistigen Lebens der preussischen Hauptstadt*. As yet, only the first volume has appeared, which extends to the death of Frederick the Great. The reader, however, would obtain an entirely wrong impression of the work if he were to believe that psychiatric points of view are expressly dwelt upon in this book. To find them he must read between the lines. The book is an extraordinarily painstaking history of the civilisation of Berlin, taken from the sources, and giving especial prominence to intellectual factors. We shall reserve the detailed discussion of this important work for another occasion, perhaps until it is fully completed.

CHRISTIAN UFER.

## BOOK REVIEWS.

HAND-COMMENTAR ZUM NEUEN TESTAMENT. IV. EVANGELIUM, BRIEFE UND OFFENBARUNG DES JOHANNES. Bearbeitet von *H. J. Holtzmann*. Zweite verbesserte und vermehrte Auflage. (Freiburg I. B. and Leipsic : 1893. J. C. B. Mohr.)

The fourth gospel, of all the sacred writings of the New Testament, has always been the reviewer's favorite book. Its profundity, its wealth of philosophical ideas, the fervor of its author's religious sentiment, and the spiritual grace that pervades the whole book, exercised an unspeakable charm on my mind. This gospel was the first to rouse my doubts in the belief of literal inspiration, and it was again the one, which, after the severest storms of infidelity had blown over, reconciled me to the spirit of Christianity. Thus the perusal of Professor Holtzmann's commentary again arouses the recollections of former struggles, and I find that even to-day the first chapter of the fourth gospel has lost none of its fascination. It is a wonderful book, and its author is a man whom I always longed to meet and shake hands with, over a span of almost two millenniums and a world-wide abyss of difference of opinion.

Only those who are familiar with the difficulties of the St. John literature of the New Testament can really appreciate this latest work of Prof. H. J. Holtzmann. He presents in a most clear and concise manner the problems involved, together with their various solutions, critically arranged. He carefully avoids obtruding on the reader his own views. He stands before us as a faithful compiler only. I say "only," but this "only" means a great deal. It does not mean that he suppresses or conceals his own views, it means that he states the facts with scrupulous impartiality. If there is any partiality apparent in his treatment of the sacred writings, it is the reverent attitude he preserves whenever love of truth obliges him to accept the negative result of critical investigations. And where is there a theological scholar to-day, who is orthodox enough to dare to accept the theory that the gospel of St. John was written by the apostle? Holtzmann carries his impartiality to the extent of not rejecting this old traditional idea, concerning the authorship of the fourth gospel, but the evidence against it is overwhelmingly sufficient to satisfy the most narrowminded believer. Holtzmann teaches us at the same time to under-



stand the spirit of the first and second century of our era, and thus excludes from the beginning the old prejudice, that if the author were not the man whom he impersonated his work must be regarded as a fraud. The historical value of the book lies in the revelations it gives us concerning the religious demands of the times in which it was written. The fourth gospel originated when the Jewish religiosity of growing Christianity began to expand into cosmic universality. The author was undoubtedly a Jew-Christian, whose home most likely was Ephesus. Ephesus was the place where we find the first beginnings of Christian Alexandrianism. Here the Logos-idea was introduced into Christian thought. Philo, the Alexandrian Jew, had already represented Moses as the incarnation of the divine Logos. Should not now a Christian familiar with Philo's philosophy apply the same method to Jesus of Nazareth? Some work adapted to satisfy the wants of the time and especially the religious yearnings for knowledge as a means of edification was needed. The Christ-idea had taken a definite shape in the imagination of the Christian congregations of Asia Minor, consisting of diaspora Jews and Gentiles, and their Christ-idea found a worthy expression in the picture of Jesus of Nazareth as we have it in the fourth gospel.

The fact that the author of the fourth gospel was a Jew-Christian, appears from his readiness to explain Jewish customs. He knows Judaism, and is familiar with Jerusalem as it appeared after the destruction of the temple. The probability is that he wrote his gospel between 120 and 140. He is comparable to Matthew in so far as both are greatly interested in the controversy between Gentiles *versus* Jews, yet Matthew's Israel has grown into the world-wide cosmos. The frequent occurrence of the very word "cosmos" in the fourth gospel is remarkable. In the same way the Greek term *γινώσκειν* (to know) appears besides the older term *πιστεύειν* (to believe), which latter is a translation of a Jewish conception, still employed so vigorously by St. Paul. The author of the fourth gospel is not familiar with Galilee and does not seem to care for consistency in the details of his accounts, for he frequently contradicts his own statements. The most important differences between his and the three synoptic gospels are the accounts as to the main field of Jesus's activity, which according to St. John was Judea, according to the synoptic gospels Galilee, and the day of Jesus's death, which according to St. John is the 14th of Nisan, according to the synoptic gospels the 15th of Nisan, so that if we follow the latter, Jesus would have been tried and condemned, against all Jewish customs, on one of the greatest festival days. Holtzmann rightly warns the reader, that whatever may speak in favor of the synoptic gospels as being, in general, historically more correct, the author of the fourth gospel might have had some special source for this particular fact.—

The Revelation of St. John has given more trouble to the Christian exegesis than any other book, and light was not shed upon its plan and construction, until it was found to be one instance only of a whole class of literary productions. When we consider the Revelation of St. John in the same line with other apocalyptic

works, and when we understand the mental disposition of the pious Jews shortly before and after Christ, we have a clew to the enigmatic visions which are unrolled before our eyes.

The expectations of the Jews in the times of the Maccabees were disappointed again and again. The great events of the world did not justify the national hopes, and God did not seem to care about fulfilling his promises. The last prophet, who called himself Malachi, or "the messenger of God," proclaimed the message of the Lord, "Yet I loved Jacob," and he comforts the faithful who still endure in all their tribulations, that "a book of remembrance is written before him for them" "that feared the Lord and that thought upon His name." After Malachi, a number of revelations appeared, which, to the satisfaction of the Messianic expectations, explained the events of the world, and prophesied that those only who should persevere until the end would be called upon to rule, together with the "Son of Man," who is to come to smite the heathens and to rule them with an iron rod. The first apocalyptic author, who wrote in 164 B. C., impersonated Daniel, the prophet, who had lived about 400 B. C. The powerful nations of the world are represented as beasts, the fourth and last beast being the Macedonian empire. It has ten horns, that is, rulers, the last one being Antiochus Epiphanes. As soon as his power is broken, the power over the earth will be given to Israel, which is called the Son of Man. The power of the tenth horn was broken, indeed, yet the Messianic hopes remained unfulfilled, and thus new prophecies were wanted, which should again explain the plans of the Almighty, so that the faithful would still endure and hope. Thus, Henoch was written, and after Henoch the Assumption of Moses, the book of Baruch, and other revelations.

The apocalyptic literature is characterised by Messianic expectations and eschatological reflections. The end of the present course of affairs is said to be near at hand and a new order will be established in which the faithful shall rule for a whole millennium and the wicked be tormented.

The Revelation of St. John represents this spirit of apocalyptic hopes among the early Christians of Asia Minor. It throws much light upon the conditions and the conceptions of a period concerning which we have very little information. We here see Christianity in its beginnings. The coloring of the Revelation is still Jewish. Its author stands in a conscious contrast to the Greek spirit which is about to change the properly Jewish character of the new doctrine. The author of the St. John revelation is a Jew to the backbone still; he denounces the antinomistic Christianity of the Gentiles as represented by Nicolaitanes whom, we are told, God hateth. He does not directly mention the apostle St. Paul, but there is little doubt that he is alluded to in Chap. II, 2, as one of them "which say they are apostles and are not."

The more powerful the Greek spirit grew in the church, the weaker became these original features inherited from the diaspora Jews until they were dropped forever through the efforts of Origenes who made a decided and successful opposition to the belief in the millennium. Yet it took some time for the traditional view of

the Messiah to change into the purer and more spiritual Christ-idea. There were two parties in the early church who spoke two radically different idioms; the one still cherished the old chiliasm, dreaming of the establishment of a millennium on earth. Their terminology moved always in the same allegories: they spoke of green and fat fields and of sulphurous abysses, of white horses and terrible beasts, of trees of life, of golden cities and of war and bloodshed, while the other party spoke of Logos, of the eternal Son through whom the world had been made, of "the dispensation of the fulness of the times in which God might gather together in one all things in Christ, both which are in heaven and which are on earth," of the *pleroma* and of aeons.

The Revelation of St. John is an expression of the former party and it was natural that after a complete victory of the latter party, Christian teachers knew not what to make of this book which shows Christian views by the side of an irreconcilable Judaism, and a worldly empire in Jerusalem, the beloved city with twenty-four Jewish elders representing the twelve tribes of Israel. The rest of Jerusalem is to be finally converted while there is no hope for paganism. The difference between Israelites and Gentiles remains a radical one even in the Holy City when the new heaven and the new earth has been created. The Gentile-Christians appear as citizens of a lower order. The Israelites alone live in the city while the Gentiles only walk in the light thereof, and they shall bring the glory and honor of the nations into it.

We have given a few glimpses of the problems of the St. John literature only. It is impossible to go over the whole field. Nor is it necessary to do so. Professor Holtzmann has given us so complete a presentation that we need but refer to his work which is indispensable to all interested in the literature of the New Testament. It will be the more valuable and welcome as it is furnished with an index, a feature rarely found in German books.

P. C.

DIE WILLENSFREIHEIT UND IHRE GEGNER. By *Dr. Constantin Gutberlet*. Fulda: Fuldaer Actiendruckerei. 1893.

Dr. Constantin Gutberlet regards the doctrine of freewill as a cardinal doctrine of Christianity. In the present booklet he endeavors to show that all attacks made upon it by unchristian savants have failed. He criticises Höfding, Lombroso, Wundt, Münsterberg, Lotze, P. Ree, and Schopenhauer, and establishes as his own view a theory of freewill which he calls "freedom of choice." He says: "There is no decision without *sufficient* reason, but there may be without *rational* reason. The sufficient reason is that a greater good may be recognised as possessing 'blind' sides, that we can do without it and even reject it for the sake of these 'blind' sides. On the other hand, a lesser good may be given as an object of willing, and our willing by its own energy conditions the free decision of the will" (p. 25). Freedom of will is not a reversal of causation, which latter, according to Gutberlet, is "an absolutely necessary law" (p. 8 and *passim*).

It is difficult to understand how Gutberlet, taking this view, can class himself among the indeterminists. From his premises, we should expect him to take the view which we have defended, that freedom of will is not contradictory to determinism. If freedom of will means freedom of choice, in which "we ourselves, as the contents of our ideas, feelings, and dispositions, are the cause not only of our activities, but also of our free decision" (p. 19), then our decisions are most certainly determined by our character. Gutberlet's criticism of Wundt (pp. 167-171), who defends freedom of will and determinism, is wide of the mark, and it seems that Gutberlet is either not clear on this point himself or he does not draw the consequences of his own standpoint. Says Gutberlet: "Only on the supposition that there is 'no other than 'mechanical' causation of natural forces, can the determinist maintain that freedom abolishes the principle of causation. In the application of the 'principle of causation 'what happens has a cause' to natural forces, the principle 'can be inverted thus: 'when all sufficient causes are given, the effect follows with 'necessity.' Yet if there are spiritual agents which stand above the mechanical 'causation of nature and natural forces, we cannot *a priori* declare that their effects 'follow with the same necessity from their character as is the case with nature. 'Accordingly, unless we assume the questionable theory that free causation is impossible, we cannot invert here the principle of causation and use it against free 'decision" (p. 168).

How does this sentence agree with Mr. Gutberlet's statements that causation is an absolutely necessary law and that "we ourselves . . . are the cause of our free decision." Our decisions are determined by "our ideas, feelings, and dispositions," and yet a sufficient cause determines its effect only if the causation is mechanical, not if it is spiritual. Gutberlet explains the difficulty as follows: "Certainly, if we 'did not reduce the free decision *once made* (*die eingetretene freie Entscheidung*), to 'an adequate cause, we should sin against logic and psychology. But we understand by 'adequate cause of a decision' not only the influence of motives, but 'also the energy of a free will." Very well then, Mr. Gutberlet would be a determinist as much as Wundt. Decisions are determined by two factors: (1) by the motives (i. e. the objects which act as stimuli upon the will) and (2) by the character of the agent. Not everybody is affected by the same stimulus in the same way. One chooses this and another that motive, and his character determines the choice; and a man of a certain character, under definitely given conditions, will freely and yet necessarily choose a certain motive. Dr. Gutberlet, it appears to us, says yes and no in one breath.

Dr. Gutberlet is the editor of the *Philosophisches Jahrbuch*, a Roman Catholic periodical. He belongs to that class of men who by partisans of free thought are regarded as especially dangerous. He is not as narrow as the common type of *defensores fidei*. He studies the works of modern savants "whose intellectual superiority," as he confesses, he "admires in many respects." He is broader than most of his *confreres*, and thus he makes the creed of his church appear broader than it practically is.

We can see no danger in the appearance of such men. It is true, he will make converts among the educated, or at least, he will keep some wavering elements within the pale of the church; for the Roman church is, upon the whole, still very hostile to progress. But, on the other hand, such a man is in his circles a missionary of science; he will help to broaden the views of his brethren. He is learning, and they will learn from him.

P. C.

GRUNDZÜGE DER PHYSIOLOGISCHEN PSYCHOLOGIE. By *Wilhelm Wundt*. Leipsic: Wilhelm Engelmann. 1893.

Wundt's "Physiological Psychology" is perhaps justly regarded as his best and most valuable work. We have just received the first part of the fourth edition and may expect that the second part will soon appear. We intend to review the whole work as soon as completed, and will state here only that this new edition contains, among many emendations and additions, an explicit account of the modern methods of psychological investigations, with descriptions and illustrations of the most important instruments invented for that purpose.

KPC.

VERGLEICHEND-ENTWICKELUNGSGESCHICHTLICHE UND ANATOMISCHE STUDIEN IM BE-  
REICHE DER HIRNANATOMIE. 3. RIECHAPPARAT UND AMMONSHORN. Abdruck  
aus *Anatomischer Anzeiger*. By *Dr. L. Edinger*. (Jena: 1893. Gustav  
Fischer.)

Dr. Edinger proves in this essay that in the cerebral evolution of animals the cortex makes its first appearance in the formation of the cornu ammonis. This convolution being the centre of smell, it is more than merely probable that smell sensations, or something analogous to smell sensations, were phylogenetically the first psychical functions.

KPC.

ÉTAT MENTAL DES HYSTÉRIQUES LES STIGMATES MENTAUX. By *Pierre Janet*. Paris: Rueff & Co. 1892.

M. Pierre Janet, one of the most prominent disciples of Professor Charcot, presents in this little volume of two hundred and thirty-three pages a summary of the results of modern psychical research as it is understood at the Salpêtrière. Charcot himself recommends the book to the medical profession. Janet investigates anæsthesia (Chap. I), amnesia, abulia, the diseases of motion, and the modifications of character. The author proposes to "describe the phenomena and endeavor to establish a rigorous determinism of their relations. The moral view of a "diseased person," he says, "ought to constitute a part of the clinical diagnosis while the psychical state must be closely investigated in its connection with physiological facts. This is the only way in which the physician can gain a knowledge "of the entire man and understand the diseases which affect his organism."

Professor Charcot states that Professor Janet's researches on the mental state of hysterical persons were begun long ago and completed under his supervision; that they were expounded by M. Janet in the Spring of 1892 in a few lectures at the



Salpêtrière; that they tend to confirm the idea, often expressed in his own teachings, that hysteria is upon the whole a mental disease.

Hypnotism has long enough been regarded not only as harmless but even as a panacea for almost all the ailments of mankind. It would be well to heed Charcot's warning, as hysterical diseases may be treated with better success, if the mystery that still surrounds them disappears before calm and scientific investigation. 5.

L'ÉCOLE D'ANTHROPOLOGIE CRIMINELLE. By *P. Abbé Maurice de Baets*. Gand: P. van Fleteren. 1893.

Dr. de Baets, Professor of Philosophy of the Gregorian University of Rome, Italy, and Secretary to the Bishop of Ghent, criticises in this elegantly printed little volume the modern school of criminal anthropology. He believes with Herbert Spencer that, if a great number of people accept certain errors, these errors must contain a kernel of truth. Professor de Baets says that he does not deny crime to be an outgrowth of the organism, to be inherited, to be closely connected with insanity, etc., but he cannot approve of criminal unaccountableness. The denial of responsibility, he says, is the denial of the wrong, and the denial of the wrong is the denial of morality. He sums up his view in italics on page 48: "Man is responsible for his acts in the measure that his acts depend on a free will." *xps*.

AGAINST DOGMA AND FREE-WILL. By *H. Croft Hiller*. London: Williams and Norgate. 1892.

The author has much to say against ecclesiasticism and sacerdotalism, and while he repudiates such men as Wundt and Ribot, he "begs to thank Drs. Weismann, Luys, and Ferrier from whose labors the views expressed in this treatise derive that scientific authentication without which they would be worthless." The book is apparently a first venture into the stormy ocean of literary pursuits. 5.

THE PHILOSOPHY OF INDIVIDUALITY, OR THE ONE AND THE MANY. By *Antoinette Brown Blackwell*. New York and London: G. P. Putnam's Sons. 1893.

The author trusts that she has "demonstrated a conscious immortality." In a former book of hers entitled "The Physical Basis of Immortality," 1876, she propounded "the theory of persistent mind-matter individuals" which are to be conceived as ultimate atoms. The present volume of five hundred and nineteen pages is written to show that "this conception of the ultimate atoms could consistently explain and harmonise mental and material phenomena and by coördinated interpretations of the most diverse processes simplify and unify nature and her manifestations." The theory of the correlation of matter and mind is accepted; "Nature," the author says, "is nothing if not mathematical," and there are many passages to which no monistic thinker would take exception. Along with them we find statements, e. g. on the rhythmic motion of atoms, etc., which it will be difficult to prove. Her peculiar view is characterised in the following sentence: "All ultimate individualities *may* be identical in kind, but no obvious necessity decides that they

"*must* be, and in an order of things where other varieties are prevalent, the weight "of evidence for the present is on the side of varieties, even in the ultimate units." The author's theory (if we rightly understand her) has been tried before. Some suggestions of Goethe's seem to indicate that he believed in soul-monads, and the German psychologist Herbart erected on the assumption of material soul-atoms his system of a mathematical psychology in which sound science was curiously mingled with improbable vagaries. The author of "The Philosophy of Individuality," although apparently quite well informed otherwise, has, strange enough, not taken notice either of Goethe or of Herbart. Perhaps she would have abandoned her theory if she had been fully familiar with Herbartism and the critique which it has received; for Herbart's soul-atoms are to-day regarded as a thing of the past. *KPS.*

Die GRUNDBEGRIFFE DER GEGENWART. By *Prof. Rudolf Eucken*. Leipsic: Veit & Co. 1893.

Prof. Rudolf Eucken discusses in this volume such topics as "Subjective—Objective"; "A priori—A posteriori"; "Monism—Dualism"; "Idealism, Realism, and Naturalism"; "Theoretical—Practical," and so forth. It seems to us that Eucken has not yet fully succeeded in reconciling his philosophy with natural science. We are glad to notice that he has a critical eye for the shortcomings of naturalists under whose methods of classification and mechanical conceptions the properly spiritual of man would be eliminated. He is judicious in his exposition of the various problems, but we miss a final solution, such as would clearly state and recognise the truth in both. Nevertheless the book is sound, full of valuable information, and its perusal is to be recommended to every student of philosophy. *KPS.*

THE ÆSTHETIC ELEMENT IN MORALITY. By *Frank Chapman Sharp, Ph. D.* New York: Macmillan & Co. 1893.

The book contains chapters on: (1) the theory of altruism; (2) the intrinsic worth of character; (3) an analysis of moral beauty; (4) an examination of the æsthetic method of ethics; and (5) the idea of obligation in æsthetics and ethics. The author's knowledge of ethical theories appears to be limited. Duns Scotus, the Realist, is called a thoroughgoing Nominalist. In spite of such defects, we find much that is good in the book. In the end of his discussion the author says with truth: "When the element of the *good*, or that which is capable of clothing itself "in the form of an ideal, is taken out of the conception of obligation, this latter "degenerates into what is nothing more than mere submission to an arbitrary imperative. . . . Prometheus, chained to the rocks for bringing the gift of fire to the "wretched barbarous inhabitants of the earth, in defiance of the will of the 'Father "of gods and men,' is one of the grandest productions of the human imagination, "and were the Supreme Being such a one as Augustine and Calvin imagined him, "we should despise the wretched slaves that licked the dust at his feet." *KPS.*

## PERIODICALS.

### ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE.

CONTENTS: Vol. V. Nos. 1 and 2.

DIE STABILITÄT DER RAUMWERTE AUF DER NETZHAUT. By *Franz Hillebrand*.

UEBER EIN OPTISCHES PARADOXON. (Second Article.) By *Franz Brentano*.

LITTERATURBERICHT. (Hamburg and Leipsic: Leopold Voss.)

This second article, "On an Optical Paradox," is a rejoinder of Franz Brentano of Vienna to Th. Lipps. We gave an account of this interesting discussion in *The Monist*, Vol. III, No. 1, p. 153 et seqq. Professor Brentano insists on explaining

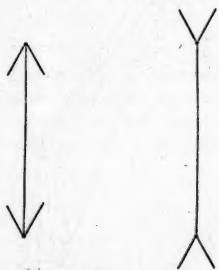


Fig. 1.

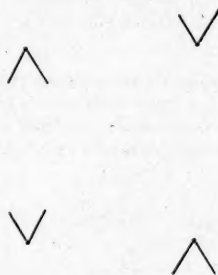


Fig. 2.

the optical illusion concerning distances between two points, as seen in Fig. 1-3, by an overestimation of small and an underestimation of large angles. He complains of being misunderstood by Professor Lipps who substitutes "acute" for "small" and "obtuse" for "large"; for, says he, in comparisons both angles may be obtuse or both may be acute. Professor Brentano adds some more puzzling figures to prove his case; and, as in his first article, his propositions are ingenious and thought-stimulating; but his arguments do not suffice to convince us of the validity of his theory. We do not exactly intend to deny the general rule as to the overestimation of large and underestimation of small angles, but are inclined to believe that it will not serve as a sufficient explanation. We reproduce the most important figures devised by Brentano, and take the liberty of adding a few remarks and additional figures of our own.

Fig. 4 represents two right angles, one of which is divided into nine angles of  $10^\circ$  each. Brentano claims that we so overestimate the nine small angles as to take

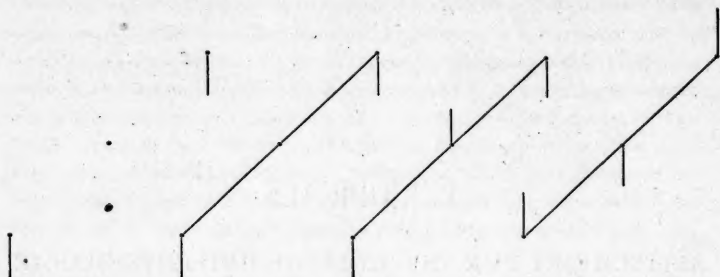


Fig. 3.

the undivided right angle as an acute one. I can only say that however much I have tried, I am not subject to the illusion.

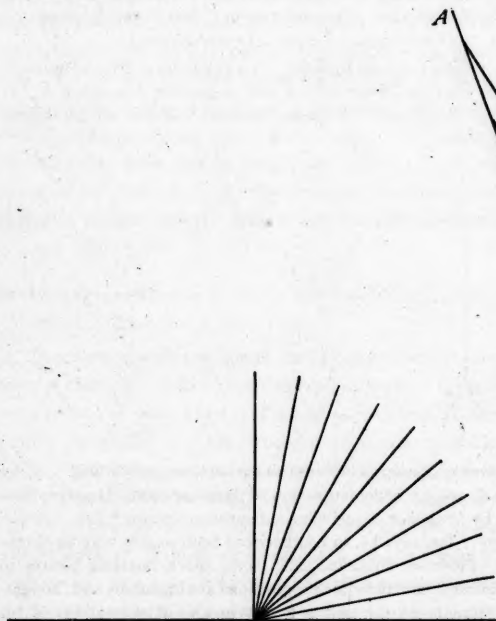


Fig. 4.

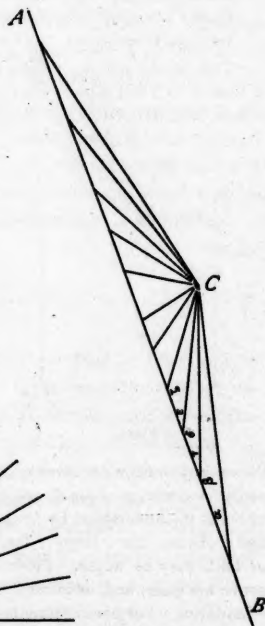


Fig. 5.

In Fig. 5 we have on the straight line  $AB$  a series of stations which are connected with a common centre. The line  $AB$  is not a curve, but this figure reminds us of a perspective view of the sector of a circle. The drawing appears as the

diagrammatic picture of a shield, the buckle of which is in *C*. Thus *AB* is conceived as representing a curve. It does not seem that a comparison of the angles has anything to do with the illusion.

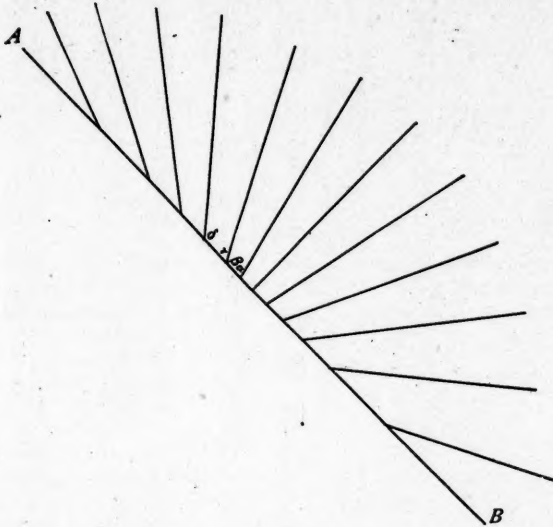


Fig. 6.

How much perspective interferes with the optical illusions under discussion, impresses itself upon my mind, when I think of figure 5 as the diagram of a mountain, rising above the plane *AB*. If I imagine I stand below the plane, which may be a high table-land, the line *AB* appears to my eye straight. But when I imagine

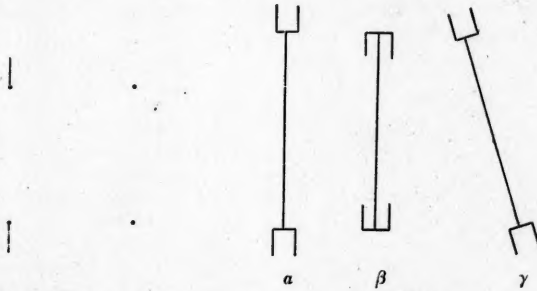


Fig. 7.

Fig. 8.

I am looking down upon the plane, the curvature of *AB* becomes very strongly marked.

In Fig. 6 we can detect no optical illusion. The line *AB* appears straight to us. The drawing reminds us of a sunrise on the ocean.



The same must be said about Figure 7. Brentano, in agreement with Lipps, claims that we are inclined to regard the distance between the ends of the two lines



Fig. 9.

as larger than between the points. If there is any illusion at all, it seems to me, that on the contrary, the distance between the ends of the lines appears shorter.



And why? We measure the distance by allowing our eyes to run from one point to the other and then comparing the measurements. This comparison is geometrically effected by combining the respective starting points, and thus judging as to the parallelism of these two lines mentally constructed. Whether or not the dots appear equidistant, depends upon the execution of all these operations. While directly measuring the distances between the points, we have an easier measurement where the lines are attached. The lines give to the points a certain vim; they almost appear to move with a velocity



Fig. 10.



indicated by the length of the little lines, while the isolated dots present a very phlegmatic appearance.



Fig. 11.



In order to see what effects other positions of the lines produce, let us compare in Fig. 9 the several relations by covering the rest. If there is any illusion as to *a* and *b*, we should say that the points of *a* appear at a greater distance; as to *b* and *c*, we see the greater distance in *c*, as to *c* and *d*, we feel doubtful, while any comparison with *e*, tends strongly to convince us of their equal distance. The

reason is obvious. The lines in *e* assist us in drawing the parallels, which we consciously or unconsciously construct in order to compare the distances.

A comparison like that of  $\alpha$  and  $\beta$  in Fig. 8, where the equal length of the combining lines is very apparent, induced Brentano to regard the illusion which is observed in Figures 1-3 as due to the angles. In our opinion he is mistaken. For the illusion actually takes place in  $\alpha$  and  $\beta$ ; only it is quickly corrected with the help of the parallels, which, as in  $\epsilon$ , assist the imagination in making an exact comparison. When we place  $\alpha$  and  $\beta$  either at a sufficient distance, or are somehow prevented from making use of the parallel lines, we shall have the same illusion as appears in Figures 1, 2, 3. To prove this, we have but to bring the figure  $\alpha$  in a slanting position, as is shown in  $\gamma$ , and the illusion is so strong that many will find it difficult to believe that  $\gamma$  is an electrotyped duplicate of  $\alpha$ .

The mooted illusions are not sense-illusions, but illusions of judgment; and we believe that the explanation of these curious phenomena must be sought in the elements which unconsciously enter into the make-up of our judgments.

Lipps says that lines are felt to be movements. If a line is continued, albeit with a slight declination, the motion appears "free and victorious," aspiring be-



Fig. 12.



Fig. 13.



Fig. 14.

yond itself; while, if confined in the corner of an acute angle, it seems cut off and impeded. The victoriously progressive motion is overestimated; the checked motion is underestimated.

Brentano, in order to meet Lipps's objections, proposes a few additional figures, of which we reproduce the most important ones in Fig. 10-14.

It seems to us that the main part which the angles play in these or any other similar figures, consists in leading our imagination astray. The parallel lines which we attempt to construct for our comparison, switch slightly off with an inclination toward the angles.

But that is not all; there are other elements that affect our judgment at the very outset. In measuring a distance we do something, and in looking at a diagram we think something. The diagram is suggestive of some reality to which we compare it. All these ideas, be they conscious, sub-conscious, or even unconscious, affect our judgment and are sometimes apt to lead it astray.

In addition we have to mention two things, the influence of which upon our verdict cannot be doubted; the one is the size of the entire figure, the other the vacuity of the distance to be measured: both tend to make the distance appear

longer than it really is. To illustrate this, we add the three Figures 15, 16, 17 which contain no angles and yet show the same illusions.

The distance between the points in Figure 17 appears longer than in Figure 16, and in Figure 16 again longer than in Figure 15. The fact is, that before starting on our measurement-journey, we have in Figure 17 already traversed a good distance after having noted the extraordinarily lengthened boundary marks. The town *A* may be exactly as far as the town *B*, yet the journey to *A* will appear longer, if I have to ride an hour before I reach the station, while I may live opposite the terminus of the railroad to *B*.



Fig. 15



Fig. 16



Fig. 17.

When our eyes glide down from one point to the other, we pass in one case through an empty desert the dreariness of which is not interrupted. We almost lose our way and become lonesome in its monotony. If our way, however, is full of variations, we are pleasantly entertained and regard our journey as so much shorter. The contrast is most obvious in figure 10. The time-illusions as to the swiftness of hours of work or amusement and the slowness of moments of *ennui* have become proverbial among all nations. The more dreariness, the more marked is the lengthening of the distance, while even a partial accompaniment shortens the traversed road.

KPS.

#### CONTENTS: Vol. V. Nos. 3 and 4.

THEORIE DES FARBENSEHENS. By *H. Ebbinghaus*.

UEBER DEN MUSKELSINN BEI BLINDEN. By *Paul Hocheisen*.

LITTERATURBERICHT. (Hamburg and Leipsic: Leopold Voss.)

#### VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE.

##### CONTENTS: Vol. XVII. No. 2.

EINIGES ZUR GRUNDLEGUNG DER SITTENLEHRE. (First Article.) By *J. Petzoldt*.

KRITIK DER GRUNDANSCHAUUNGEN DER SOCIOLOGIE H. SPENCER'S. By *P. Barth*.

WERTHTHEORIE UND ETHIK. (Second Article.) By *Chr. Ehrenfels*. (Leipsic: O. R. Reisland.)

# THE AMERICAN JOURNAL OF PSYCHOLOGY.

CONTENTS: Vol. V. No. 3.

- ON ERRORS OF OBSERVATION. By *Prof. James McKeen Cattell*.  
 MINOR STUDIES FROM THE PSYCHOLOGICAL LABORATORY OF CLARK UNIVERSITY.  
 ON THE DISCRIMINATION OF GROUPS OF RAPID CLICKS. By *Thaddeus L. Bolton*.  
 STATISTICS OF DREAMS. By *Mary Whiton Calkins*.  
 ON THE PRESSURE SENSE OF THE DRUM OF THE EAR AND "FACIAL VISION."  
 By *F. B. Dresslar*.  
 ON REACTION-TIMES WHEN THE STIMULUS IS APPLIED TO THE REACTING HAND.  
 By *J. F. Reigart and Edmund C. Sanford*.  
 EXPERIMENTS UPON PHYSIOLOGICAL MEMORY BY MEANS OF THE INTERFERENCE  
 OF ASSOCIATIONS. By *John A. Bergström*.  
 A NEW INSTRUMENT FOR WEBER'S LAW; WITH INDICATIONS OF A LAW OF SENSE  
 MEMORY. By *James H. Leuba*.  
 A NEW PENDULUM CHRONOGRAPH. By *Edmund C. Sanford, Ph. D.*  
 LABORATORY COURSE IN PHYSIOLOGICAL PSYCHOLOGY. (Fourth Paper.) By  
*Edmund C. Sanford, Ph. D.* (Worcester, Mass.: J. H. Orpha.)

# THE PHILOSOPHICAL REVIEW.

CONTENTS: Vol. II. No. 3.

- GERMAN KANTIAN BIBLIOGRAPHY. By *Dr. Erich Adickes*.  
 THE EPISTEMOLOGY OF NEO-KANTISM. By *Prof. Andrew Seth*.  
 MENTAL MEASUREMENT. By *Prof. J. McK. Cattell*.  
 BOOK REVIEWS. (Boston, New York, Chicago: Ginn & Co.)

# REVUE PHILOSOPHIQUE.

CONTENTS: Vol. XVIII. No. 5.

- PSYCHOLOGIE DU MUSICIEN. I. L'ÉVOLUTION DES APTITUDES MUSICALES. By  
*L. Dauriac*.  
 LA SOCIABILITÉ ET LA MORALE CHEZ LES ANIMAUX. By *Houssay*.  
 SUR LES IDÉES GÉNÉRALES. By *Marchesini*.  
 QUESTIONNAIRE SUR L'AUDITION COLORÉE, FIGURÉE ET ILLUMINÉE. By *Gruber*.  
 L'ATTENTION ET LES IMAGES. By *F. Paulhan*.  
 UNE ILLUSION D'OPTIQUE. By *B. Bourdon*.  
 SCIENCE ET SOCIALISME. *G. Sorel*.  
 ANALYSES ET COMPTES RENDUS. (Paris: Félix Alcan.)

CONTENTS: Vol. XVIII. No. 6.

- LA NOUVELLE THÉORIE DE L'HÉRÉDITÉ DE WEISSMANN. By *Y. Delage*.  
 UN CALCULATEUR DU TYPE VISUEL. By *J.-M. Charcot and A. Binet*.  
 PSYCHOLOGIE DU MUSICIEN.—II. L'OREILLE MUSICALE. By *L. Dauriac*.

# REVUE DE MÉTAPHYSIQUE ET DE MORALE.

CONTENTS: Vol. I, No. 2.

- LE MOUVEMENT ET LES ARGUMENTS DE ZÉNON D'ÉLÉE. By *G. Noël*.  
 LE PROBLÈME MORAL DANS LA PHILOSOPHIE DE SPINOZA. By *V. Delbos*.

LE CONCEPT DU NOMBRE CHEZ LES PYTHAGORICIENS. By *G. Milhaud*.  
 LE DIALOGUE DANS L'ENSEIGNEMENT DE LA PHILOSOPHIE. By *C. Mélinand*.  
 (Paris: Librairie Hachette et Cie.)

CONTENTS: Vol. I. No. 3.

LES PRÉTENDUS SOPHISMES DE ZÉNON D'ÉLÉE. By *V. Brochard*.  
 SPIR ET SA DOCTRINE. By *A. Penjon*.  
 ESSAI SUR LE CARACTÈRE GÉNÉRAL DE LA CONNAISSANCE. By *G. Remacle*.

## PHILOSOPHISCHES JAHRBUCH.

CONTENTS: Vol. VI. No. 2.

BEGRIFF DER PHILOSOPHIE. By *Uebinger*.  
 DIE OBJECTIVITÄT UND DIE SICHERHEIT DES ERKENNENS. By *Isenkrahe*.  
 DER BEGRIFF DES "WAHREN." (Concluded.) By *Franz Schmid*.  
 DER GRUNDPLAN DER MENSCHLICHEN WISSENSCHAFT. By *Bahlmann, S. J.*  
 HANDSCHRIFTLICHES ZU DEN WERKEN DES ALANUS. By *Bäumker*. (Fulda, 1893.)



PUBLICATIONS  
OF THE  
OPEN COURT PUBLISHING COMPANY.

---

**BINET, ALFRED.**

**THE PSYCHIC LIFE OF MICRO-ORGANISMS.**  
Authorized translation. 135 pages. Cloth, 75 cents; Paper, 50 cents.

**ON DOUBLE CONSCIOUSNESS.**  
New Studies in Experimental Psychology. 93 pages. Paper, 50 cents.

**CARUS, PAUL.**

**THE ETHICAL PROBLEM.**  
Three lectures delivered at the Invitation of the Board of Trustees before the Society for Ethical Culture of Chicago, in June, 1890. 90 pages. Cloth, 50 cents; Paper, 30 cents.

**FUNDAMENTAL PROBLEMS.**  
The Method of Philosophy as a Systematic Arrangement of Knowledge. Second edition, enlarged and revised. 372 pages. Cloth, \$1.50.

**HOMILIES OF SCIENCE.**  
310 pages. Cloth, Gilt Top, \$1.50.

**THE IDEA OF GOD.**  
A disquisition upon the development of the idea of God. 32 pages. Paper, 15 cents.

**MONISM AND MELIORISM.**  
A Philosophical Essay on Causality and Ethics. 83 pages. Paper, 50 cents.

**THE SOUL OF MAN.**  
An investigation of the Facts of Physiological and Experimental Psychology. With 132 illustrative cuts and diagrams. 458 pages. Cloth, \$3.00.

**TRUTH IN FICTION. TWELVE TALES WITH A MORAL.**  
Printed on fine laid paper, white and gold binding, gilt edges, 128 pages. Price \$1.00.

**COLBERT, E., M. A.**

**HUMANITY IN ITS ORIGIN AND EARLY GROWTH.**  
409 pages. Cloth, \$1.50.

**EPITOMES OF THREE SCIENCES.**

1. **COMPARATIVE PHILOLOGY; THE STUDY OF SANSKRIT.**  
By PROF. H. OLDENBERG, of the University of Kiel.
2. **EXPERIMENTAL PSYCHOLOGY.**  
By PROF. JOSEPH JASTROW, of the University of Wisconsin.
3. **OLD TESTAMENT HISTORY; OR, THE RISE OF THE PEOPLE OF ISRAEL.**  
By PROF. C. H. CORNILL, of the University of Königsberg, with especial introductions by Profs. Oldenberg and Cornill and Prefatory Remarks by the Editor of *The Open Court*. 140 pages. Cloth, 75 cents.

**FREYTAG, GUSTAV.**

**THE LOST MANUSCRIPT.**  
A Novel. Authorized translation from the Sixteenth German Edition. Two volumes. 953 pages. Extra cloth, gilt top, \$4.00; the same in one volume, cloth, \$1.00; paper, 75 cents.

**MÜLLER, PROF. F. MAX.**

**THREE INTRODUCTORY LECTURES ON THE SCIENCE OF THOUGHT.**

With a correspondence on "Thought Without Words," between F. Max Müller and Francis Galton, the Duke of Argyll, George J. Romanes and others. 128 pages. Cloth, 75 cents.

**THREE LECTURES ON THE SCIENCE OF LANGUAGE.**

The Oxford University Extension Lectures, with a Supplement, "My Predecessors," an essay on the genesis of "The Science of Thought." 112 pages. Cloth, 75 cents.

**RIBOT, TH.**

**THE PSYCHOLOGY OF ATTENTION.**

Authorized translation, 121 pages. Cloth, 75 cents.

**THE DISEASES OF PERSONALITY.**

Authorized translation, 157 pages. Cloth, 75 cents.

**ROMANES, GEORGE JOHN.**

**DARWIN AND AFTER DARWIN.**

An Exposition of the Darwinian Theory and a Discussion of Post-Darwinian Questions.

**1. THE DARWINIAN THEORY,**

460 pages. 125 illustrations. Cloth, \$2.00.

**2. POST-DARWINIAN QUESTIONS.**

(In preparation).

**DARWINISM ILLUSTRATED.**

Wood-Engravings Explanatory of the Theory of Evolution, selected by and drawn under the direction of Prof. George J. Romanes. Enamelled paper, linen cover, 94 pages. Price, \$1.00.

**TRUMBULL, M. M.**

**THE FREE TRADE STRUGGLE IN ENGLAND.**

Second Edition, revised and enlarged. 296 pages. Cloth, 75 cents; paper, 25 cents.

**WHEELBARROW: ARTICLES AND DISCUSSIONS ON THE LABOR QUESTION.**

With portrait of the author. 300 pages. Cloth, \$1.00; paper, 50 cents.

**MAKING BREAD DEAR.**

A Controversy between Wheelbarrow and Sympathizer upon Corners and the Board of Trade, with reference to the Labor Question. 32 pages. Paper, 10 cents.

**EARL GREY ON RECIPROCITY AND CIVIL SERVICE REFORM.**

With Comments by General M. M. Trumbull. Price, 10 cents.

**TURNER, PROF. J. B.**

**THE ONLY GOOD THING IN ALL THE WORLDS.**

With pamphlet entitled "Universal Law and its Opposites." Cloth. 176 pages. Price, \$1.00.

**THE OPEN COURT.**

A Weekly Journal. Devoted to the Religion of Science. Terms of Subscription, \$2.00 a year throughout the Postal Union. Single copies, 5 cents.

Price list of back numbers, singly and in complete files:

Numbers 1 to 27.....each, 15 cents.

" 28 to 163....." 10 "

" 164 to date....." 5 "

In files, volumes I-II.....Unbound, \$3.25. Bound, \$4.00.\*

" III-IV-V-VI....." 2.25. " 3.00.\*

\*Carriage extra on bound volumes.

London Agents: Messrs. Watts & Co.

**THE MONIST.**

A Quarterly Magazine of Philosophy and Science.

Terms of Subscription: In the United States, Canada and Mexico, yearly, \$2.00; single copies, 50 cents. Throughout the Postal Union, yearly, \$2.25; single copies, 60 cents.

Volumes I and II in Oxford binding, each, \$3.00. Postage 25 cents extra to countries in the U. P. U.

London Agents: Messrs. Watts & Co.

**The Open Court Publishing Co., 324 Dearborn St., Chicago.**

## NEW PUBLICATIONS.

### THE SCIENCE OF MECHANICS.

A Critical and Historical Exposition of its Principles. By Dr. Ernst Mach, Professor of Physics in the University of Prague. Translated from the second German edition by Thomas J. McCormack, with two hundred and fifty cuts and illustrations, 518 pp., cloth, \$2.50.

### THE RELIGION OF SCIENCE.

By Paul Carus. Extra edition, 50 cents.

### THE RELIGION OF SCIENCE LIBRARY.

A bi-monthly edition in paper covers of our publications, including monographs of Prof. F. Max Müller, Th. Ribot, Alfred Binet, Paul Carus, Gustav Freytag's Lost Manuscript, and other works.

Subscription price { \$1.50 a year, postpaid, in the United States, Canada and Mexico.  
8 Shillings a year, postpaid, in Great Britain and countries in U.P.U.

### THE OPEN COURT PUBLISHING CO.

770 MONON BUILDING, 324 DEARBORN ST., CHICAGO.

Imperial Folio, new type, surfaced paper, beautiful and artistic illustrations. Publication in parts to begin with Opening of Exposition. Sold only by subscription.

## THE BOOK OF THE FAIR.

An Historical and Descriptive presentation of the World's Science, Art, and Industry, as viewed through the Columbian Exposition at Chicago in 1893. Designed to set forth the Display made by the Congress of Nations, of human achievements in material forms, so as the more effectually to illustrate the Progress of Mankind in all the departments of Civilised Life.

BY HUBERT HOWE BANCROFT.

Besides Regular Edition, an Edition de Luxe, Limited.

THE BANCROFT COMPANY, Publishers, History Building, San Francisco, Cal.  
Auditorium Building, Chicago, Ill.

No Library can be complete in American History without Mr. Bancroft's Works, consisting of *Native Races*; *Central America*; *Mexico*; *Texas*; *Arizona and New Mexico*; *California*; *Northwest Coast*; *Oregon*; *Washington*, *Idaho*, and *Montana*; *British Columbia*; *Alaska*; *Utah*; *Nevada*, *Wyoming*, and *Colorado*; *Popular Tribunals*; *California Pastoral*; *California Inter-Pocula*; *Essays and Miscellany*; *Literary Industries*.

"It is certainly a worthy scheme, and carried out most conscientiously."—*London Spectator*. "Written with dramatic penetration and genius."—*British Quarterly Review*. "A monument to the writer's intelligence and industry."—*New York Herald*. "Admirable for its vigor and freshness."—*London Times*. "Mr. Bancroft's volumes will increase in value as the years go by."—*Boston Traveller*. "From these volumes must be drawn hereafter the only trustworthy history of these parts."—*Century*. "He is the Herbert Spencer of Historians."—*Boston Journal*. "Most remarkable and instructive work."—*London Post*. "Lays the generation under a debt of obligation."—*Chicago Inter Ocean*. "One of the noblest literary enterprises of our day."—*John G. Whittier*. "It will mark a new era in history writing."—*Chicago Times*. "His volumes are really a marvel of research, discrimination, and industry."—*New York Tribune*. "Many English and American writers of eminence, including Carlyle, Herbert Spencer, Oliver Wendell Holmes, Sir Arthur Helps, J. W. Draper, W. H. Lecky, and J. R. Lowell, have already testified to the value of Mr. Bancroft's Historical labors."—*London Times*.

A new book, entitled *The Resources and Development of Mexico*, 8vo, illustrated, has just been issued in Spanish and in English. It was written by Mr. Bancroft at the request of President Diaz, every part of the Republic being visited for the latest and most accurate information.

THE BANCROFT COMPANY, Publishers, History Building, San Francisco, Cal.  
Auditorium Building, Chicago, Ill.

Main Offices "Book of the Fair," 30 and 31 Auditorium Building, Chicago.

# THE CALCUTTA REVIEW

A QUARTERLY MAGAZINE,  
EDITED BY JAMES W. FURRELL.

## CONTENTS FOR OCTOBER, 1892.

- Old Places in Murshidabad. No. II. By H. Beveridge, C.S.  
The Management of Animals in the Calcutta Zoölogical Gardens. By Sarat Chandra Mitra M.A., B.L.  
The Late Mr. Curwen and His Works.  
Hooghly Past and Present. No. I. Hooghly under the Portugese. By Shumbhoo Chunder Dey.  
District Boards and County Councils. By H. A. D. Phillips, C.S.  
The Hindu Family. By Guru Proshad Sen.  
Hydraulic Works for India. By Jno. F. Fischer, General, R.E.  
Drainage of Riparian Municipalities and Villages and of Rural Tracts in Bengal. By Mahananda Guppa.  
The Dehra Dun. No. I. By C. W. Hope.  
Ostia to Ozein, A. D. 68. By J. D.  
Note on the Siege of Seringapatam.  
The Quarter. By the Editor.  
Summary of Annual Reports.  
Critical Notices. General Literature. Vernacular Literature. Acknowledgments.

Orders now being registered for Second Series "Selections" from

*The Calcutta Review*

In monthly Parts of 120 pages, uniform with First Series, bringing the "SELECTIONS" from No. 101 up to 200. Subscription Rs. 15 per annum in advance.

As only a limited number will be struck off, early application is necessary to prevent disappointment.

For full Prospectus and Table of Contents, apply to the CITY PRESS, 12, Bentinck Street, Calcutta, or to any European Bookseller.

N. B.—A few sets of the First Series, comprising XI Vols., half bound in roan Morocco, are available to Subscribers to the Second Series at 25 per cent. off the reduced price, Rs. 60.

## CALCUTTA:

THOMAS S. SMITH, CITY PRESS, 12, BENTINCK STREET.

## LONDON:

MESSRS. KEGAN PAUL, TRENCH, TRÜBNER, & CO., 57 LUDGATE HILL

SUBSCRIPTION PER ANNUM { INDIA, Rs. 17 inclusive postage.  
EUROPE, £1.4s., or each No. 6s.  
U. S. A., \$6.00 per year, single numbers \$1.50.

RECENT PUBLICATIONS  
OF THE  
**AMERICAN ACADEMY**  
OF  
POLITICAL AND SOCIAL SCIENCE.

---

RELATION OF ECONOMIC CONDITIONS TO THE CAUSES OF CRIME. By  
HON. CARROLL D. WRIGHT. Price, 25 cents.

RELATION OF THE STATE TO EDUCATION IN ENGLAND AND AMERICA.  
By PRESIDENT ISAAC SHARPLESS, of Haverford College. Price, 25 cents.

OUR FAILURES IN MUNICIPAL GOVERNMENT. By GAMALIEL BRADFORD, Esq.  
Price, 15 cents.

COST AND EXPENSE. By PROF. S. N. PATTEN, of the University of Pennsylvania.  
Price, 25 cents.

HOME RULE FOR OUR AMERICAN CITIES. By MR. ELLIS P. OBERHOLTZER.  
Price, 25 cents.

NATURE OF THE FEDERAL STATE. By MR. E. V. ROBINSON. Price, 25 cents.

SURPLUS GAINS OF LABOR. By PROF. J. B. CLARK, of Smith College. Price, 15 cents.

PSYCHOLOGIC BASIS OF SOCIAL ECONOMICS. By PROF. LESTER F. WARD. Price,  
25 cents.

CONSTITUTIONAL AND ORGANIC LAWS OF FRANCE, 1875-1889. Translation  
with Historical Introduction. By MR. C. F. A. CURRIER, of Massachusetts Institute of  
Technology. Price, 50 cents.

THE BANKING QUESTION contains

NATIONAL AND STATE BANKS. *Hon. Horace White.*

AMERICAN BANKING AND THE MONEY SUPPLY OF THE FUTURE. *Hon. Michael D. Harter.*

STATE AND NATIONAL BANK CIRCULATION. *Hon. A. B. Hepburn.*

BANKING SYSTEM—OLD AND NEW. *Hon. J. H. Walker.*

BASIS OF SECURITY FOR NATIONAL BANK NOTES. *Hon. Henry Bacon.* Price, \$1.00.

THE ALCOHOL QUESTION IN SWITZERLAND. By HON. W. MILLIET, of Bern.  
Price, 15 cents.

THE HISTORY, THEORY, AND TECHNIQUE OF STATISTICS. By PROF. AUGUST  
MEITZEN, of Berlin. Translated into English by PROF. ROLAND P. FALKNER, of the  
University of Pennsylvania. New cloth edition, just ready. Price, \$1.50.

---

"There are few valuable works on statistics in the English language, and the appearance  
of a work so scholarly and comprehensive as Dr. Meitzen's will be hailed with delight not  
only by students of economics and political science, but by all who are interested in the science  
of conveying truth by means of figures."—*National Baptist.*

---

A complete list of the Academy's publications will be sent on application.

---

**AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE,**  
STATION B., PHILADELPHIA, U. S. A.



# THE OPEN COURT

A  
WEEKLY MAGAZINE

OF

SCIENCE AND PHILOSOPHY.

---

CONTRIBUTIONS AND ESSAYS

BY

PROF. F. MAX MÜLLER,

ERNST HAECKEL,

PROF. EWALD HERING,

PROF. W. PREYER,

PROF. ERNST MACH,

PROF. AUGUST WEISMANN,

CARL HEINRICH CORNILL,

PROF. WILHELM WUNDT,

GEO. J. ROMANES,

ALFRED BINET,

LUCIEN ARRÉAT,

WM. M. SALTER,

MONCURE D. CONWAY,

PROF. JOSEPH JASTROW,

PROF. H. OLDENBERG,

F. M. HOLLAND,

PROF. E. D. COPE,

TH. RIBOT,

PROF. GEO. VON GIZYCKI,

GEN. M. M. TRUMBULL,

DR. FELIX L. OSWALD,

CARUS STERNE,

T. BAILEY SAUNDERS,

LUDWIG NOIRÉ, AND OTHERS.

---

*The Open Court* is published weekly in eight quarto pages. It contains short ethical sermons, popular expositions of scientific subjects, timely notes on current topics, etc. Besides original articles *The Open Court* presents accurate and authorised translations in the field of Philosophy and Science, from the periodical literature of Continental Europe, and also reviews of noteworthy recent investigations.

It is the pronounced object of *The Open Court* to HARMONISE RELIGION WITH SCIENCE and the philosophical problems that bear upon this important question are editorially treated in its columns. Holding that the monistic solution is the only tenable position, it will in the future, as in the past, remain open to the discussion of the principal problems of philosophy, religion, ethics, and sociology.

*The Open Court* is neither exclusive nor sectarian, but liberal; it seeks to aid the efforts of all scientific and progressive people in the churches and out of them, toward greater knowledge of the world in which we live, and the moral and practical duties it requires.

Subscription price, post free (United States and all countries in U. P. U.) for twelve months, \$2.00. Six months, \$1.00. Single copies, 5 cents.

Send for specimen copies (free).

---

ADDRESS

THE OPEN COURT PUBLISHING COMPANY.

MONON BUILDING, 324 DEARBORN STREET, CHICAGO, ILL.

LONDON AGENTS: WATTS & CO., 17 Johnson's Court, Fleet St.

# THE MONIST

A QUARTERLY MAGAZINE.

*Editor:* DR. PAUL CARUS.

*Associates:* { EDWARD C. HEGLER.  
MARY CARUS.

## CONTENTS:

	PAGE
NATIONALIZATION OF EDUCATION AND THE UNIVERSITIES. H. VON HOLST - - - - -	493
MEANING AND METAPHOR. LADY VICTORIA WELBY - - - - -	510
REPLY TO THE NECESSITARIANS. Rejoinder to Dr. Carus. CHARLES S. PEIRCE - - - - -	526
THE FOUNDER OF TYCHISM, HIS METHODS, PHILOSOPHY, AND CRITICISMS. In Reply to Mr. Charles S. Peirce. EDITOR - - - - -	571
THE FOUNDATIONS OF THEISM. PROF. E. D. COPE - - - - -	623
LITERARY CORRESPONDENCE. Germany. CHRISTIAN UFER - - - - -	640
BOOK REVIEWS.—PERIODICALS. [For particulars see inside title-page.] - - - - -	643-658

CHICAGO:

THE OPEN COURT PUBLISHING CO.

London: WATTS & CO., 17 Johnson's Court, Fleet St., E. C.

Price, 30 cts.; Yearly, \$2.00. In England and U. P. U., 2s 6d.; Yearly, 9s 6d.

Copyright, 1893, by the Open Court Publishing Co.

Entered at the Chicago Post Office as Second-Class Matter

# THE MONIST.

A Quarterly Magazine of Philosophy, Religion, Science, and Sociology.

PUBLISHED BY

THE OPEN COURT PUBLISHING COMPANY,

MONON BUILDING, 324 DEARBORN STREET, CHICAGO, ILL.

POST OFFICE DRAWER F.

## AGENTS AND TERMS OF SUBSCRIPTION.

LONDON: Watts & Co., 17 Johnson's Court, Fleet St., E. C.	Single Copies, 2s. 6d.	Yearly, 9s. 6d.
PARIS: Brentano's, 17 Avenue de l'Opera	fr. 3	fr. 12
LEIPZIG:	Mk. 2.50	Mk. 9.50
ROTTERDAM: H. A. Kramers & Son	---	Fl. 6.60
TURIN: { Libreria Carlo Clausen	---	Lire 12
PALERMO: {	---	---
NEW YORK: { Brentano's, 5 Union Square	50 cents	\$2 00
WASHINGTON: { 1015 Pennsylvania Ave.	---	---
BOSTON: Damrell & Upham, 283 Washington St.	---	---
Postpaid to New South Wales, Victoria, Queensland, Tasmania and New Zealand, and all countries in U. P. U., for one year, \$2.25.		

## CONTENTS OF NO. I, OCT., 1890.

MR. A. R. WALLACE ON PHYSIOLOGICAL SELECTION.	GEORGE J. ROMANES, LL. D. F. R. S.
THE IMMORTALITY OF INFUSORIA.	ALFRED BINET
ON THE MATERIAL RELATIONS OF SEX IN HUMAN SOCIETY.	PROF. E. D. COPE
THE ANALYSIS OF THE SENSATIONS.	PROF. ERNST MACH
THE ORIGIN OF MIND.	DR. PAUL CARUS
THE MAGIC MIRROR.	MAX DESSOIR
THE PSYCHOLOGY OF HARALD HÖFFDING.	W. M. SALTER
PHILOSOPHICAL CORRESPONDENCE.—France.	LUCIEN ARRÉAT
PHILOSOPHY IN AMERICAN COLLEGES AND UNIVERSITIES.	---
BOOK REVIEWS.	---

## CONTENTS OF NO. II, JAN., 1891.

THE ARCHITECTURE OF THEORIES.	CHARLES S. PEIRCE
ILLUSTRATIVE STUDIES IN CRIMINAL ANTHROPOLOGY. 1. "La Bête Humaine" and Criminal Anthropology.	PROF. CESARE LOMBROSO
2. Psychiatry and Criminal Anthropology.	HERMANN SCHUBERT
THE SQUARING OF THE CIRCLE.	DR. PAUL CARUS
THE CRITERION OF TRUTH.	CARUS STERNE
THE PSYCHOLOGY OF THE STAR-FISH.	PROF. FRIEDRICH JODL
GERMAN PHILOSOPHY IN THE NINETEENTH CENTURY.	LUCIEN ARRÉAT
RECENT FRENCH PHILOSOPHICAL WORKS.	---

## CONTENTS OF NO. III, APRIL, 1891.

THE FACTORS OF EVOLUTION.	JOSEPH LE CONTE
THE PHYSIOGNOMY OF THE ANARCHISTS.	PROF. CESARE LOMBROSO
MISONEISM AND PHILONEISM.	PROF. CESARE LOMBROSO
THE QUESTION OF DUALITY OF MIND.	R. M. BACHE
IMMORTALITY.	DR. GEORGE M. GOULD
SOME QUESTIONS OF PSYCHO-PHYSICS. A Discussion:	---
1. Sensation and the Elements of Reality.	PROF. ERNST MACH
2. Feeling and the Elements of Feeling.	DR. PAUL CARUS
EUROPEAN CORRESPONDENCE.	---

## CONTENTS OF NO. IV, JULY, 1891.

PSYCHOLOGY OF CONCEPTION.	JAMES SULLY
THE RIGHT OF EVOLUTION.	MONCURE D. CONWAY
A CONVICTED ANARCHIST'S REPLY TO PROFESSOR LOMBROSO.	MICHAEL SCHWAB
THE PRINCIPLE OF WELFARE.	PROF. HARALD HÖFFDING
THE CRITERION OF ETHICS AN OBJECTIVE REALITY.	EDITOR
ON THOUGHT AND LANGUAGE.	PROF. MAX MÜLLER
LITERARY CORRESPONDENCE.	---
France.	LUCIEN ARRÉAT
Pedagogics in Germany.	CHRISTIAN UFER
BOOK REVIEWS.	---
PERIODICALS.	---

# THE MONIST.

CONTENTS CONTINUED.

## CONTENTS OF VOL. 2, NO. I, OCT., 1891.

THE PRESENT POSITION OF LOGICAL THEORY. . . . .	PROF. JOHN DEWEY
WILL AND REASON. . . . .	B. BOSANQUET
ETHNOLOGICAL JURISPRUDENCE. . . . .	JUSTICE ALBERT H. POST
AMERICAN POLITICS. . . . .	THOMAS B. PRESTON
ARTIFICIAL SELECTION AND THE MARRIAGE PROBLEM. . . . .	HIRAM M. STANLEY
THOUGHT AND LANGUAGE. . . . .	GEORGE JOHN ROMANES
THE CONTINUITY OF EVOLUTION. The Science of Language versus The Science of Life, as represented by Prof. F. Max Müller and Prof. G. J. Romanes. . . . .	EDITOR
LITERARY CORRESPONDENCE.	
France. The Intellectual Awakening of the Langue D'Oc. . . . .	THEODORE STANTON
Germany. Recent Publications in the Domain of Pathological Psychology. . . . .	CHRISTIAN UFER
EMILE LITTRÉ. A Sonnet. . . . .	LOUIS BELROSE, JR.
DIVERSE TOPICS. The Origin of Thought-forms. . . . .	
BOOK REVIEWS. . . . .	PERIODICALS.

## CONTENTS OF VOL. 2, NO. II, JAN., 1892.

MENTAL EVOLUTION. An Old Speculation in a New Light. . . . .	PROF. C. LLOYD MORGAN
THE NEW CIVILISATION DEPENDS ON MECHANICAL INVENTION. . . . .	DR. W. T. HARRIS
RELIGION AND PROGRESS. Interpreted by the Life and Last Work of Wathen Mark Wilks Call. . . . .	MONCURE D. CONWAY
FACTS AND MENTAL SYMBOLS. . . . .	PROF. ERNST MACH
PROFESSOR CLIFFORD ON THE SOUL IN NATURE. . . . .	F. C. CONYBEARE
ARE THERE THINGS IN THEMSELVES? . . . . .	EDITOR
LITERARY CORRESPONDENCE.	
France. . . . .	LUCIEN ARRÉAT
Germany. Recent Works in Psychology. . . . .	CHRISTIAN UFER
DIVERSE TOPICS.	
The Clergy's Duty of Allegiance to Dogma and the Struggle between World-Conceptions. Comment by Prof. F. Max Müller Concerning the Discussion on Evolution and Language. . . . .	
BOOK REVIEWS. . . . .	PERIODICALS.

## CONTENTS OF VOL. 2, NO. III, APRIL, 1892.

THE DOCTRINE OF NECESSITY EXAMINED. . . . .	CHARLES S. PEIRCE
PSYCHICAL MONISM. . . . .	DR. EDMUND MONTGOMERY
THE CONSERVATION OF SPIRIT AND THE ORIGIN OF CONSCIOUSNESS. . . . .	FRANCIS C. RUSSELL
ON CRIMINAL SUGGESTION. . . . .	PROF. J. DELBŒUF
LITERARY CORRESPONDENCE.	
France. . . . .	LUCIEN ARRÉAT
Germany. . . . .	CHRISTIAN UFER
CRITICISMS AND DISCUSSIONS.	
Thought and Language. A letter by Prof. G. J. Romanes. . . . .	
A Defense of Littré. Louis Belrose, Jr. . . . .	
Emile Littré's Positivism. A Reply. Editor. . . . .	
Observations on Some Points in James's Psychology. Dr. W. L. Worcester. . . . .	
The Nature of Mind and the Meaning of Reality. Editor. . . . .	
Monism and Mechanicism: Comments on Prof. Ernst Haeckel's Position. Editor. . . . .	
Mr. Charles S. Peirce on Necessity. Editor. . . . .	
BOOK REVIEWS. . . . .	PERIODICALS.

## CONTENTS OF VOL. 2, NO. IV, JULY, 1892.

OUR MONISM: The Principles of a Consistent, Unitary World-View. . . . .	PROF. ERNST HAECKEL
THE MAGIC SQUARE. . . . .	PROF. HERMANN SCHUBERT
MR. SPENCER ON THE ETHICS OF KANT. . . . .	EDITOR
WHAT DOES ANSCHAUUNG MEAN? . . . . .	EDITOR
THE LAW OF MIND. . . . .	CHARLES S. PEIRCE
MR. CHARLES S. PEIRCE'S ONSLAUGHT ON THE DOCTRINE OF NECESSITY. . . . .	EDITOR
LITERARY CORRESPONDENCE.	
France. . . . .	LUCIEN ARRÉAT
Germany. . . . .	CHRISTIAN UFER
DIVERSE TOPICS.	
Professor Haeckel's Monism. Editor. . . . .	
The Religion of Science. Editor. . . . .	
The Future Position of Logical Theory. Edward T. Dixon. . . . .	
Comte and Turgot. Professor Schaarschmidt. . . . .	
BOOK REVIEWS. . . . .	PERIODICALS.



# THE MONIST.

CONTENTS CONTINUED.

## CONTENTS OF VOL. III, NO. 1, OCTOBER, 1892.

MAN'S GLASSY ESSENCE	CHARLES S. PEIRCE
THE FUTURE OF THOUGHT IN AMERICA	PROF. E. D. COPE
MENTAL MUMMIES	DR. FELIX L. OSWALD
THE NERVOUS GANGLIA OF INSECTS	DR. ALFRED BINET
HINDU MONISM. Who Were Its Authors, Priests or Warriors?	PROF. RICHARD GARBE
THE IDEA OF NECESSITY: ITS BASIS AND ITS SCOPE	EDITOR
LITERARY CORRESPONDENCE.	
Recent Evolutionary Studies in Germany	CARUS STERNE
France	LUCIEN ARRÉAT
CRITICISMS AND DISCUSSIONS.	
Comte and Turgot. Louis Belrose, Jr.	
Some Remarks Upon Professor James's Discussion of Attention. Hiram M. Stanley.	
Is Monism Arbitrary? Editor.	
A Reply to a Critic. With a Discussion of Necessary Truths. Edward T. Dixon.	
Mathematics a Description of Operations with Pure Forms. In Reply to Mr. Edward T. Dixon.	
Editor.	
BOOK REVIEWS.	PERIODICALS.

## CONTENTS OF VOL. III, NO. 2, JANUARY, 1893.

THE DOCTRINE OF AUTA	PROF. C. LLOYD MORGAN
EVOLUTIONARY LOVE	CHARLES S. PEIRCE
REMAN: A Discourse Given at South Place Chapel, London	MONCURE D. CONWAY
INTUITION AND REASON	CHRISTINE LADD FRANKLIN
CRUELTY AND PITY IN WOMAN	GUILLAUME FERRERO
PANPSYCHISM AND PANBIOTISM	EDITOR
LITERARY CORRESPONDENCE.	
France	LUCIEN ARRÉAT
Germany	CHRISTIAN UFER
CRITICISMS AND DISCUSSIONS.	
A Letter from Mr. Herbert Spencer.	
Logic as Relation Lore. F. C. Russell.	
Observations on Some Points in James's Psychology. Dr. W. L. Worcester.	
Professor Ernst Mach's Term Sensation.	
BOOK REVIEWS.	PERIODICALS.

## CONTENTS OF VOL. III, NO. 3, APRIL, 1893.

RELIGION AND MODERN SCIENCE	PROF. F. JODL
THE RELIGION OF SCIENCE	EDITOR
THE SUPERSTITION OF NECESSITY	PROF. JOHN DEWEY
THE ISSUES OF "SYNECHISM"	G. M. MCCRIE
THE FOURTH DIMENSION. Mathematical and Spiritualistic	PROF. HERMANN SCHUBERT
CORRESPONDENCE.	
The Religious Outlook in France	THEODORE STANTON
New French Books	LUCIEN ARRÉAT
BOOK REVIEWS.	PERIODICALS.

## CONTENTS OF VOL. III, NO. 4, JULY, 1893.

NATIONALISATION OF EDUCATION AND THE UNIVERSITIES	H. VON HOLST
MEANING AND METAPHOR	LADY VICTORIA WELBY
REPLY TO THE NECESSITARIANS. Rejoinder to Dr. Carus	CHARLES S. PEIRCE
THE FOUNDER OF TYCHISM, HIS METHODS, PHILOSOPHY, AND CRITICISMS. In Reply to Mr. Charles S. Peirce	EDITOR
THE FOUNDATIONS OF THEIRM	PROF. E. D. COPE
LITERARY CORRESPONDENCE.	
Germany	CHRISTIAN UFER
BOOK REVIEWS.	PERIODICALS.

4934



